REVISION OF THE PHYLINAE (HEMIPTERA, MIRIDAE) OF THE INDO-PACIFIC

RANDALL T. SCHUH

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ABSTRACT

The Phylinae (Hemiptera, Miridae) of the Indo-Pacific are revised, including all taxa known to occur in an area ranging from the Marquesas Islands west to India, north to the Hawaiian Islands and Japan (excluding temperate Asia) and south to New Zealand (excluding Australia and the sub-Antarctic islands). Forty-six genera and 272 species are treated in detail. One new tribe, Auricillocorini, is recognized. One new genus, *Biliranoides,* is described in the Pilophorini. Four new genera, *Auricillocoris, Cleotomiris, Cleotomiroides,* and *Wygomiris,* are placed in the Auricillocorini; *Zaratus* Distant is tentatively placed in the Auricillocorini. One new genus, *Podullahas,* is described in the Hallodapini; *Clapmarius* Distant is transferred from the Mirinae to the Hallodapini. Ten new genera, *Abuyogocoris, Arafuramiris, Biromiris, Ctypomiris, Papuamimus, Solomonomimus, Gulacapsus, Pseudohallodapocoris, Pseudoleucophoroptera,* and *Trichocephalocapsus,* are placed in the Leucophoropterini; *Lasiolabops* Poppius and *Sejanus* Distant are placed in the Leucophoropterini. Five new genera, *Decomioides, Gressittocapsus, Malaysiamiris, Malaysiamiroides,* and *Rubrocuneocoris,* are placed in the Phylini.

The following genera are synonymized; *Cephalocapsidea* Poppius = *Paramixia* Reuter; *Trichofulvius* Poppius = *Hallodapus* Fieber; *Torma* China = *Decomia* Poppius; and *Sampsigeranus* Distant = *Opuna* Kirkaldy. The following species are synonymized: *Orthotylellus samoanus* Knight, *Orthotylellus rufescens* Usinger, and *Orthotylellus pallescens* Usinger = *Paramixia rufescens* (Poppius); *Cephalocapsidea obscurata* Poppius, *Orthotylellus samoanus* var. *nigrellus* Knight, and *Orthotylellus brunescens* = *Paramixia singalensis* (Poppius); *Pilophorus pulullus* Poppius = *Pilophorus typicus* Distant; *Marshalliella orientalis* Poppius = *Ellenia obscuricornis* (Poppius); *Psallus sharpianus* var. *pelidnopterus* Kirkaldy, *Opuna hawaiiensis* Kirkaldy, *Psallus swezeyi* Kirkaldy, *Tichorhinus kirkaldyi* Perkins, and *Psallus sharpianus luteus* Zimmerman = *Opuna sharpianus* (Kirkaldy); and, *Ragmus morosus* Ballard = *Campylomma livida* Reuter. The following new combinations are created: *Atractotomus coxalis* Reuter = *Druthmarus coxalis*; *Cephalocapsidea rufescens* Poppius = *Paramixia rufescens*; *Psallus singalensis* Distant = *Paramixia singalensis*; *Lutheriella oecophylloides* Poppius = *Acrorrhinium oecophylloides*; *Trichofulvius fasciatus* Poppius = *Hallodapus fasciatus*; *Trichofulvius zonatus* Poppius = *Hallodapus zonatus*; *Atractotomus collinus* Van Duzee = *Campylomma collina*; *Torma colae* China = *Decomia colae*; *Torma samoanus* Knight = *Decomia samoanus*; *Campylomma innotata* Carvalho = *Decomioides innotata*; *Campylomma annulatus* Knight = *Opuna annulatus*; *Sampsigeranus pilosulus* Distant = *Opuna pilosulus*; *Psallus sharpianus* Kirkaldy = *Opuna sharpianus.*

Photographic dorsal view illustrations, male genitalic line drawings, and distributional maps are presented for most species. Scanning electron micrographs of the pretarsus, metathoracic scent-gland evaporatory area, and other structures are presented for most genera. Stridulatory structures are reported for additional species of *Hallodapus* Fieber and are also noted to occur in a similar form in species of *Ctypomiris,* new genus. A glandular opening and small evaporatory area are reported to occur on the posterior margin of the mesepimeron dorsad of the metathoracic scent-gland evaporatory area; this structure is apparently widely distributed in Heteroptera, although not previously reported in the literature. A key to the genera and keys to some groups of species are presented.

A discussion to phylogenetic relationships and arguments for higher category placement are presented.

INTRODUCTION

The only comprehensive treatments of the mirid fauna of the Indo-Pacific area of Distant (1904, 1910b), which treated taxa known from India, Ceylon, and Burma, and Carvalho (1956) which dealt with the fauna of Micronesia. All remaining papers are of lesser scope, dealing with faunas of very limited areas or simply describing occasional new species.

In the present paper I summarize our knowledge of the mirid subfamily Phylinae (*sensu* Schuh, 1974) for the Indo-Pacific, bringing together information from the literature as well as examining large but previously unstudied collections. Forty-six genera, 21 (46%) of which are new, and 272 species, 187 (69%) of which are new, are treated, most in detail.

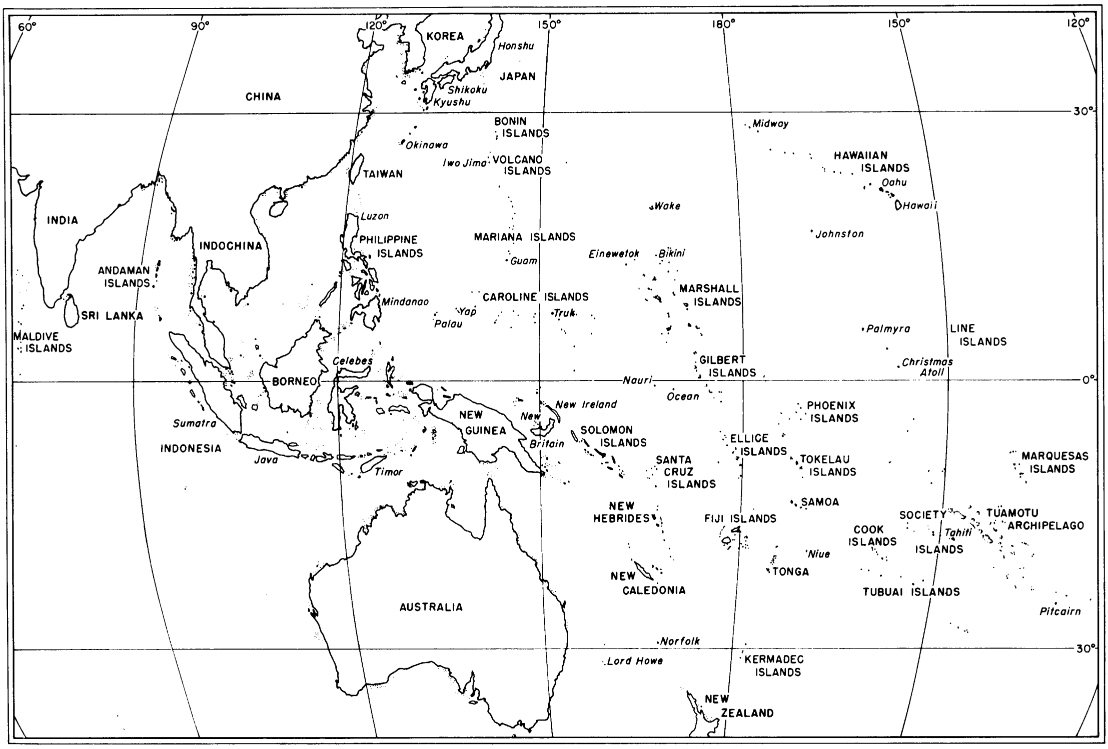
60°
90°
120°
150°
180°
150°
120°
KOREA
Honshu
JAPAN
CHINA
Shikoku
Kyushu
30°
BONIN ISLANDS
Midway
Okinawa
Iwo Jima
VOLCANO ISLANDS
HAWAIIAN ISLANDS
TAIWAN
Oahu
Hawaii
Wake
Luzon
INDIA
PHILIPPINE ISLANDS
MARIANA ISLANDS
Johnston
INDOCHINA
Guam
Einewetok
Bikini
ANDAMAN ISLANDS
MARSHALL ISLANDS
Mindanao
CAROLINE ISLANDS
Yap
Palau
Truk
SRI LANKA
Palmyra
LINE ISLANDS
MALDIVE ISLANDS
Celebes
GILBERT ISLANDS
Christmas Atoll
BORNEO
Nauri
0°
Ocean
New Ireland
PHOENIX ISLANDS
Sumatra
NEW GUINEA
New Britain
SOLOMON ISLANDS
INDONESIA
ELLICE ISLANDS
Java
Timor
SANTA CRUZ ISLANDS
TOKELAU ISLANDS
MARQUESAS ISLANDS
SAMOA
NEW HEBRIDES
FIJI ISLANDS
SOCIETY ISLANDS
TUAMOTU ARCHIPELAGO
COOK ISLANDS
Tahiti
Niue
NEW CALEDONIA
TONGA
TUBUAI ISLANDS
AUSTRALIA
Pitcairn
Norfolk
Lord Howe
KERMADEC ISLANDS
30°
NEW ZEALAND

FIG. 1. Map of the study area.

Much of the groundwork for generic assignments I present here was laid in my earlier publication dealing with the fauna of South Africa (Schuh, 1974). In fact, as indicated in that paper, I had examined several hundred mimetic specimens from the Bishop Museum representing mostly undescribed taxa. I have followed the basic format of my African paper here, presenting descriptive and distributional information first, and arguments of interrelationships and assignment to higher taxa afterward, using the descriptive section as a source of information. With the exception of tribal level groupings, all taxa are arranged alphabetically within the body of the paper.

THE STUDY AREA

The study area is shown in figure 1. It includes the region from just west of the East Pacific Rise (the Marquesas Islands and west), through India north to Hawaii and Japan (but excluding temperate Asia), south to New Zealand (but not including Australia or the subAntarctic islands). The project, as originally conceived, dealt with a much more restricted geography, but one which fragmented almost all generic level groups. Most of the same higher phyline taxa treated here were already under study by J. C. M. Carvalho and G. F. Gross for Australia. Thus, I deal with the Australian fauna only to give an idea of which Indo-Pacific taxa occur there, at least within the limits of present knowledge. The faunas of Japan and India are treated in somewhat lesser detail because material from those areas was either difficult to obtain or fragmentary.

Distributional information for all genera and species is summarized in geographic terms. Locality data are generally recorded using political subdivisions. Some place names have changed in the last few decades and occasionally old and new names are used interchangeably. Prominent examples are: Jesselton = Kota Kinabalu; West Irian = Irian Jaya.

I have not attempted to present a general discussion of biogeography at this time.

MATERIALS AND METHODS

All institutions that might have been expected to have material from the Indo-Pacific were contacted. Of those listed the B. P. Bishop Museum in Honolulu, had by far the most extensive collections. Of the approximately 10,000 specimens I examined, about 6500 came from the Bishop Museum. Most of that material was amassed under the direction of the late J. L. Gressitt with substantial support from the National Science Foundation. The most important historical collections are those in Helsinki, having most Poppius and Reuter types, and the British Museum (Natural History), with Distant material from Sri Lanka and India.

The collections of the American Museum of Natural History were also important. These include specimens collected primarily by L. J. Brass and G. H. H. Tate on several Archbold expeditions to New Guinea and the work of T. C. Schneirla in the Philippines.

In all but a few cases I attempted to secure type specimens for species recorded from the Indo-Pacific in the literature. For 15 species I was not able to locate types even after persistent requests to museums where they might have been deposited. The following taxa are therefore considered *nomina dubia*: *Demoplesia lutheri* Poppius (Ceylon), *Ectenellus tibialis* Reuter (Szechwan), *Chlamydatus crassicornis* (Poppius), *Euchariocoris pallidipennis* Reuter (Szechwan), *Laemocoris javanus* Breddin (Java), *Leucodellus albidus* Reuter (Szechwan), *Pararagmus annulicoris* Poppius (Ceylon), *Plagiognathus lividus* Reuter (Szechwan), *Psallus alpestris* Reuter (Szechwan), *Psallus holomelas* Reuter (Szechwan), *Psallus opacus* Reuter (Szechwan), *Sthenarus interruptus* Reuter (Szechwan), *Sthenarus niveoaurenatus* Reuter (Szechwan), *Sthenarus pallidipes* Reuter (Szechwan), and *Sthenarus potanini* Reuter (Szechwan).

New taxa are described only when male specimens were available, and in most cases males are designated as holotypes. This procedure is adopted because in many species, males and females can be associated only on the basis of geography, *viz., Campylomma, Malaysiamiris, Sejanus.* In some cases females cannot be positively assigned to a given genus, *viz., Malaysiamiris* and *Malaysiamiroides.* Also, the male genitalia possess valuable species diagnostic characters as well as characters useful in recognizing higher taxa. Female genitalia are at present too poorly known to allow such comparisons.

Approximately 700 males were dissected. Female representatives of most genera were dissected to determine tribal placement based on the structure of the posterior wall. All genitalic illustrations were made from temporary slide mounts in lactophenol, using a Wild M-20 compound microscope with camera lucida. Most drawings were made at ×20 or ×40. Dorsal view photographs were made with a Zeiss Tessovar at varying magnifications so that the final size of all illustrations is roughly the same. Size comparisons can be made by referring to the Appendix. Scanning electron micrographs were prepared on a Cambridge 250 series microscope using Polaroid positive/negative film.

Measurements were made using an ocular micrometer or with a movable stage equipped with IKL digital micrometers accurate to 0.001 millimeter. All measurements are in millimeters. Measurements given in species descriptions are means. The Appendix gives means and ranges of seven measurements for all taxa listed alphabetically.

In the synonymic listings, only original references and references subsequent to the Carvalho catalog (Carvalho, 1959) are given, except in the case of new synonyms.

MORPHOLOGY

A few summary comments about morphology investigated during this study are given below.

Stridulatory structures appear to exist in all species currently placed in the genus *Hallodapus* (Hallodopini). A similar metafemoral-wing edge stridulatory device occurs in the genus *Ctypomiris* (Leucophoropterini).

Metathoracic scent-gland evaporatory areas, previously unused in phyline taxonomy, appear to show some consistent patterns of variation which will be useful in forming higher categories. Much additional work needs to be done to produce more accurate characterizations of the variation that exists. Use of the scanning electron microscope for such work should be the most efficacious approach.

In studying the metathoracic scent-gland evaporatory areas while preparing the present paper, I observed the consistent occurrence in all phylines examined of a small evaporatory area of surface structure similar to that of the metathoracic evaporatorium, but located on the posterior dorsal margin of the mesepimeron. The ostiole is at the ventral margin of the evaporatory area. Mr. Jerry Cassis (Oregon State University) and Ms. Rebecca Clayton (University of Connecticut) report that they have observed similar structures in the Dicyphina and Mirinae, respectively. This structure appears not to have been reported in the literature.

I have prepared SEM micrographs of meso- and meta-femoral trichobothria for representatives of most genera. I have not attempted to analyze the numbers and distribution of the structures but provide the documentation as a source of information for further investigation.

As has been documented previously, the male genitalia possess many characters valuable in tribal, generic, and species level taxonomy, and indeed, a number of categories recognized in this paper are based on male genitalic structure. The female genitalia possess characters in the posterior wall and also apparently in the bursa copulatrix. Yet, although the male genitalia are relatively well known, those of the female require further study.

Setal structures have been used previously as characters in the classification of the Miridae (Carvalho, 1955a; Knight, 1941). My studies suggest that setae do possess useful taxonomic information and that they will be most easily investigated through the use of the scanning electron microscope.

ACKNOWLEDGMENTS

I especially thank Ms. Kathleen Schmidt, Scientific Assistant in the Department of Entomology of the American Museum who prepared the four dorsal view drawings (figs. 70, 223, 700, and 786), most of the line drawings, the maps, and in other ways was instrumental in the completion of this project. Scientific Assistant Dr. Mohammad Shadab prepared views of the head and thorax of some mimetic species. Mr. Thomas Ryand and Mrs. Bella Galil performed many dissections, drawings, and measurements. Ms. Marjorie Favreau, Scientific Assistant Emerita, Department of Entomology of the American Museum, sorted and prepared the material collected by Schneirla and Reyes in the Philippines. Ms. Joan Whelan and Mr. Ian Stupakov assisted in the preparation of the scanning electron micrographs. Ms. Beatrice Brewster typed or corrected much of the manuscript. I thank my colleague Dr. Pedro Wygodzinsky for patiently reading a substantial portion of the manuscript, and Dr. Norman Platnick for his efforts in offering suggestions for substantive improvements in the section on phylogenetic relationships.

Dr. J. C. M. Carvalho graciously allowed me to study phyline material from New Guinea which was on loan to him from the British Museum. Dr. Gordon Gross responded in detail to numerous requests about antlike phylines from Australia. Drs. Carvalho and Gross have also held some of their work on the Australian fauna in abeyance until my work on the Indo-Pacific fauna was completed.

Not least of all my wife, Brenda Massie, tolerated the expenditure of much emotional energy on my part while I learned Wang word processing in the middle of this project, as well as helping materially with the preparation of the manuscript and the specimen photographs.

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MUSEUM ABBREVIATIONS

AMNH, American Museum of Natural History, New York
Berkeley, University of California, Berkeley
Bishop, B. P. Bishop Museum, Honolulu
BMNH, British Museum (Natural History), London
CAS, California Academy of Sciences, San Francisco
DSIR, Department of Scientific and Industrial Research, Auckland, Auckland, New Zealand
FM, Field Museum of Natural History, Chicago
Helsinki, University Zoological Museum, Helsinki
Leiden, Rijksmuseum van Natuurlijke Historie, Leiden
Lund, University of Lund, Sweden
Queensland, University of Queensland Museum, Brisbane
USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C.

KEY TO THE GENERA OF INDO-PACIFIC PHYLINAE[1]

1. Parempodia setiform or only weakly fleshy (figs. 228, 275), not lamellate and recurved; dorsum and thorax laterally without flattened scalelike setae (but see *Lasiolabops*); vesica in male variable 8
   Parempodia lamellate, fleshy, and recurved apically (figs. 25, 77, 205); dorsum and thorax laterally with flattened, appressed, lanceolate setae; vesica nearly always in the form of a simple tube (figs. 136, 144; but see *Parasthenaridea*) 2
2. Pronotum distinctly constricted mesially, weakly to strongly necklike and hourglass-shaped (figs. 38–40, 50–52, 70); hemelytra with two transverse bands of scalelike setae 3
   Pronotum not constricted mesially, although lateral margin sometimes sinuous; if hemelytra with scalelike setae in transverse bands, then scalelike setae also present at least on scutellum 4
3. Pronotum with a pair of erect conical protuberances on anterior lobe (figs. 66, 70, 72) .... *Biliranoides*
   Pronotum without conical protuberances (figs. 38–40, 50–52) .... *Bilirania*
4. Hemelytra nearly always with bands of transverse scalelike (but see *Pilophorus yunganensis*) and scutellum laterally and apically and metepimeron laterally with patches of scalelike setae .... *Pilophorus*
   Hemelytra, scutellum and metepimeron with scalelike, scattered setae, not organized into rows or patches 5
5. Antennal segment two greatly enlarged, terete or boxlike (figs. 74, 75) ..... *Druthmarus*
   Antennal segment two not terete or boxlike 6
6. Large, broad-bodied species; head strongly flattened anteroposteriorly, tylus not projecting beyond frons in dorsal view; vesica in male with a small field of spicules subtending secondary gonopore ... *Ambonea*

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[1] *Ragmus flavomaculatus, Ragmus pellucidus*, and *Ragmus srilankensis* not included.

Smaller, more elongate species; head not strongly flattened anteroposteriorly, tylus distinctly projecting beyond frons in dorsal view 7

7. Vesica in male in the form of a simple tube (figs. 107, 114) .... *Paramixia*

Vesica more complex (fig. 122) .... *Parasthenaridea*

8. Body form weakly to strongly antlike, lateral corial margin usually weakly to strongly sinuous, sometimes nearly straight; anterior pronotal margin frequently flattened and collar-like; coloration usually brown or chestnut, hemelytra usually with some at least weakly contrasting lighter fasciae 9

Body ovoid in dorsal view, not antlike, lateral corial margin convexly rounded or straight, not sinuous; anterior pronotal margin never flattened and collar-like; coloration sometimes partially or completely dark, but pattern seldom organized into dark background with contrasting light fasciae 31

9. White fascia, usually present basally on cuneus (figs. 479, 520); other light fasciae often present on clavus and corium 10

White fasciae, when present, never on cuneus, although often present on clavus and corium 21

10. Ventral surface of metafemur with a fringe of erect setae (fig. 753); mesoscutum always exposed 11

Ventral surface of metafemur without fringe of erect setae; mesoscutum often obscured by pronotum 14

11. Anterior pronotal margin in the form of a flattened collar (figs. 749, 789) 12

Anterior pronotal margin not flattened and collar-like, but reflexed .... *Pseudoleucophoroptera*

12. Head concave behind and at least partially obscuring anterior pronotal margin; gula long, more or less vertical, flattened laterally and sometimes platelike (fig. 755) .... *Gulacapsus*

Head not concave behind, not obscuring anterior margin of pronotum; gula elongate or not, but never conspicuously flattened laterally 13

13. Head exserted, eyes removed from anterior pronotal margin (figs. 786, 796); head, and especially genae, with long erect dark setae; membrane dark basally and light apically (figs. 786, 787) ..... *Trichocephalocapsus*

Eyes more or less contiguous with anterior pronotal margin; head without conspicuous erect dark setae; membrane unicolorous or nearly so .... *Pseudohallodapocoris*

14. Mesoscutum exposed, not obscured by pronotum; hemalytra at least weakly rounded and declining laterally; anterior pronotal margin not collar-like but reflexed; dorsum impunctate; pronotum never highly polished and shining .... *Leucophoroptera*

Mesoscutum covered by pronotum; hemelytra flat, not rounded and declining laterally; anterior pronotal margin flattened and collar-like; dorsum usually punctured (but see *Biromiris*); pronotum always highly polished and shining 15

15. Lateral corial margin distinctly sinous and reflexed ventrally on anterior one-half (fig. 666) 18

Lateral corial margin at most weakly sinuous not distinctly reflexed on anterior one-half (figs. 649, 687–689) 16

16. Dorsum distinctly punctured (figs. 700, 709) 17

Dorsum impunctate, usually with some erect, dark lanceolate setae (figs. 687–689) .... *Biromiris*

17. Hemelytra highly polished and shining; pronotal collar very broad (figs. 649, 654–656) .... *Abuyogocoris*

Hemelytra dull; pronotal collar not so broad (fig. 718) .... *Solomonomimus*

18. Metafemora with a stridulatory plectrum on inner surface (figs. 713, 714); abdomen without striae laterally on sternite two; humeral angles of pronotum shoulder-like (figs. 700, 709) .... *Ctypomiris*

Metafemora without stridulatory plectrum; humeral angles of pronotum not shoulder-like; abdominal sternite one finely striate laterally (figs. 668, 732) 19

19. Pronotum strongly constricted mesially, hourglass-shaped (fig. 728) .... *Waterhouseana*

Pronotum not constricted mesially 20

20. Hemelytra covered with appressed, shining, silvery setae (figs. 666, 679–681) .... *Arafuramiris*

Hemelytra not covered with appressed shining setae .... *Papuamimus*

21. Cuneus broadly triangular (figs. 223, 298), cuneal incisure obsolete; metathoracic scent-gland evaporatory area distinctly and sometimes greatly protruding laterally (figs. 226, 227, 291); cuneal incisure obsolete; parempodia weakly fleshy and convergent apically (fig. 228) 22

Cuneus elongate triangular; metathoracic scent-gland evaporatory area not protruding laterally; cuneal incisure at most shallow, never obsolete; parempodia setiform 25

22. Cuneal fracture angled somewhat anteromesially (figs. 298–300); mesoscutum exposed;

endocorium present on anterior one-half of corium .... *Wygomiris*

Cuneal fracture perpendicular to corial margin (figs. 223, 260); mesoscutum obscured by pronotum; endocorium obsolete on anterior one-half 23

23. Clavus elevated along commissure (fig. 234); costa obscured in dorsal view on anterior one-half of corium (figs. 223–225) .... *Auricillocoris*

Clavus not elevated along commissure 24

24. Antennal segment two thickened, segments three and four weakly to distinctly terete; body stocky; metathoracic scent-gland evaporatory area not strongly protruding; frons and vertex not strongly declivent .... *Cleotomiris*

Antennal segment two not thickened, segments three and four linear and slender; body elongate; metathoracic scent-gland evaporatory area strongly protruding; frons and vertex strongly declivent .... *Cleotomiroides* (see also *Zaratus*)

25. Antennal segment one flattened and platelike (fig. 356) .... *Clapmarius*

Antennal segment one cylindrical 26

26. Frons in the form of a distinct spine (figs. 329, 332) .... *Acrorrhinium*

Frons not spiniform 27

27. Dorsum with pattern of contrasting coloration, usually dark background with lighter contrasting fascia (but see *Hallodapus luridus* and *H. fasciatus*) 28

Dorsum unicolorous, usually medium brown or lighter 30

28. Posterior margin of eyes contiguous with anterior pronotal margin; hemelytral fasciae in the form of complete bands, or round or quadrate patches (figs. 397, 401–403) .... *Hallodapus*

Eyes distinctly removed from anterior pronotal margin; hemelytral fascia in the form of two triangles with the apices meeting at the claval commissure (fig. 337) 29

29. Relatively small, length apex tylus-cuneal fracture about 2.50; head more or less spherical; genae glabrous ... *Alloeomimus*

Larger species, length apex tylus-cuneal fracture ±3.50; head dorsoventrally elongate .... *Sohenus*

30. Anterior lobe of pronotum more or less parallel-sided, much narrower than posterior lobe (figs. 431, 432) .... *Podullahas*

Pronotum more or less trapezoidal, anterior lobe not parallel-sided (fig. 442) .... *Trichophorella*

31. Pulvilli very large, covering nearly entire inner surface of claw (figs. 1066, 1095); hemelytra generally hyaline or subhyaline with very neat, simple vestiture (figs. 1085–1087, 1094); male genitalia as in figures 1088, 1091, etc. .... *Decomia*

Pulvilli smaller, attached to ventral surface of claw and usually covering only a limited portion of it (but see *Rhinacloa forticornis*); if hemelytra hyaline, then vestiture not so neat; male genitalia variable but not as above 32

32. Metafemur with a more or less complete row of tiny brown to black spicules on distal half of dorsal surface (figs. 828, 829); vesica in male generally with two apical blades (figs. 833, 838, 841, etc.) sometimes modified or absent (figs. 904, 938); head always at least weakly concave behind; coloration from entirely white with black spots on femora to entirely black .... *Campylomma* (including *Rhinacloa forticornis*)

Metafemur without row of spicules on dorsal surface; vesica variable, but never with two apical blades as above; head concave or weakly exerted behind; coloration variable 33

33. Large species, length apex tylus-cuneal fracture usually greater than 2.25; head transverse, short dorsoventrally (figs. 450–452); eyes occupying entire height of head and extending laterally well beyond anterolateral angles of pronotum; entire body covered with woolly, white setae (figs. 450, 454) .... *Lasiolabops*

Size variable, but length apex tylus-cuneal fracture usually less than 2.25; head not conspicuously transverse and eyes only slightly extending beyond anterolateral angles of pronotum although sometimes occupying entire height of head; vestiture variable, but never as above 34

34. Dorsum distinctly rugulose, surface very irregular (fig. 1271); general coloration reddish to maroon; male genitalia as in figures 1281–1283 .... *Gressittocapsus*

Dorsum at most inconspicuously rugulose, generally very smooth; male genitalia not as above 35

35. Large dark brown to blackish species, length apex tylus-cuneal fracture 1.98–2.39; cuneus sometimes reddish; male genitalia as in figures 1487–1489; New Zealand .... *Sthenarus myersi*

Smaller species, length apex tylus-cuneal fracture usually under 2.20; coloration variable; male genitalia not as in figures 1487–1489 36

36. Vesica in male with a well-developed second-

ary gonopore, usually with one or two strongly sclerotized apical spines or a mesial spine 39

Vesica usually with a weakly developed secondary gonopore, sometimes relatively well developed, but never with an apical or mesial spine 37

37. Eyes, at least in males, occupying nearly entire height of head; coloration, size, and vesical morphology variable . . . . *Sejanus*

Eyes occupying only about two-thirds of height of head 38

38. Black and white species, antennal segment two in male short, enlarged and more or less terete . . . . *Spanagonicus albofasciatus*

Coloration variable, but never black and white; antennal segment two in male long, cylindrical . . . . *Tytthus*

39. Generally very small ovoid species, length apex tylus-cuneal fracture less than 1.58; head, including eyes, smoothly rounded in dorsal view; vesica in male distinctive, as in figures 1225–1229; with a mesial spine on shaft . . . . *Decomioides*

Size variable; head generally not very smoothly rounded, eyes weakly protruding laterally; vesica never with a mesial spine, structure not as above 40

40. Vesica in male with one or two elongate apical spines arising just basad or just distad of secondary gonopore 41

Vesica with at most a single short apical spine, or apex of vesica attenuated distad of gonopore 41

41. Generally orangish or reddish, sometimes very dark; antennal segment two often enlarged in males; eyes usually large and occupying entire height of head; pulvilli small . . . . *Malaysiamiris* and *Malaysiamiroides*

Light colored species; antennal segment two slender; eyes occupying about two-thirds of height of head; pulvilli covering entire ventral surface of claws . . . . *Badezorus tyrianus*

42. Vesica in male with a series of distinct notches subtending secondary gonopore (figs. 1253, 1264, 1425) . . . . *Ellenia* and *Ragmus*

Vesica in male without series of notches subtending secondary gonopore 43

43. Head concave behind, conforming to anterior margin of pronotum; cuneus normally with some red markings; vesica in male strongly curving, sometimes forming a complete coil . . . . *Rubrocuneocoris*

Head weakly exserted, not conforming to anterior pronotal margin; vesica sinuous, but never forming a coil 44

44. Dorsum with conspicuous red spots . . . . *Psallus rubromaculosus*

Dorsum sometimes spotted, but never with red . . . . *Opuna*

TRIBE PILOPHORINI

AMBONEA ODHIAMBO

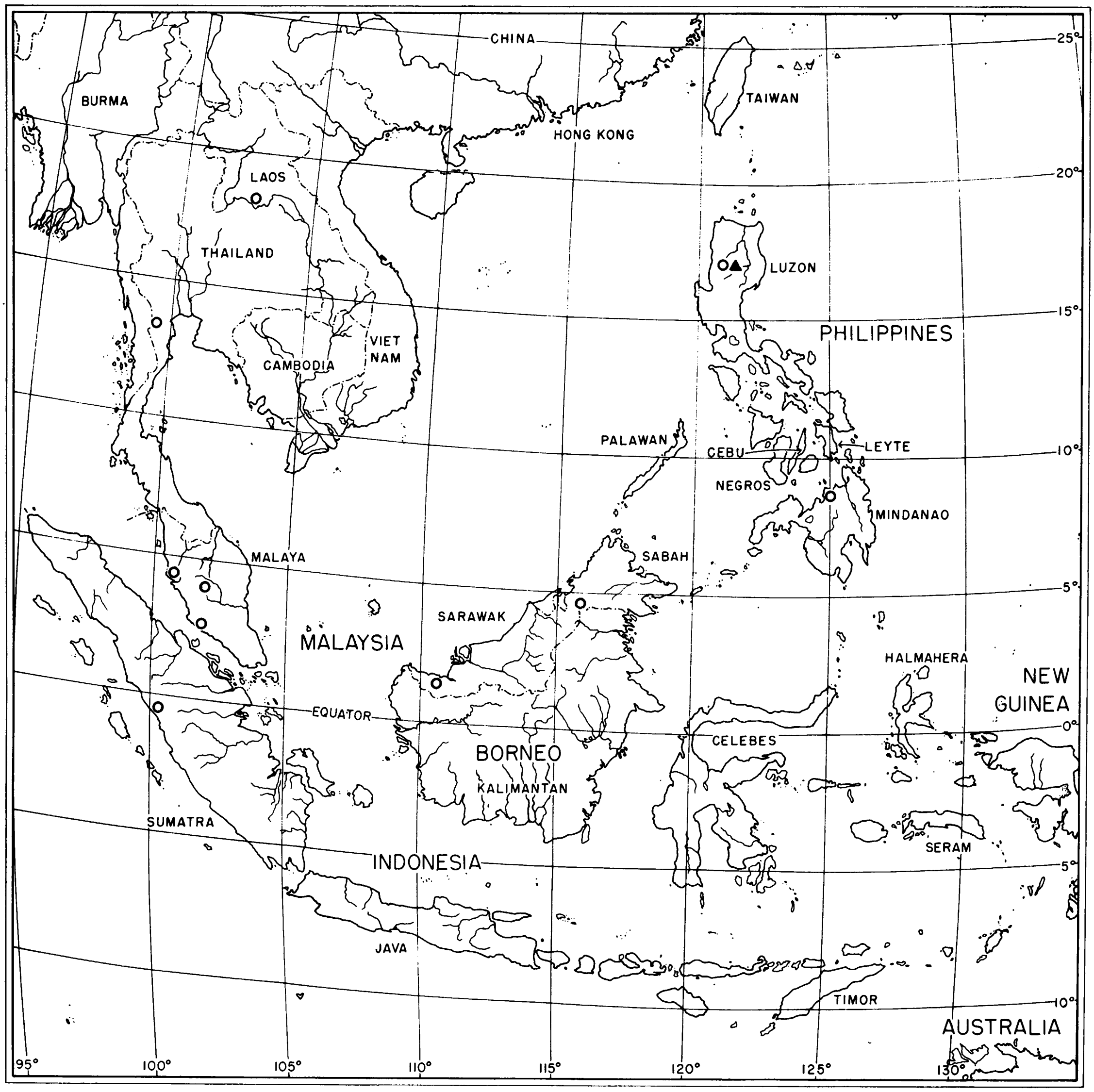
Ambonea Odhiambo 1960, p. 393; Schuh, 1974, p. 201.

DIAGNOSIS: Recognized by the suite of characters common to most Pilophorini, including the flattened sericeous setae (figs. 23, 24), the form of the male and female genitalia, the lamellate recurved, apically convergent parempodia (fig. 25), the broad body form with no mesial constriction (figs. 4–6), and the cylindrical second antennal segment. The vesica is pilophorine in its untwisted basically J-shaped form; the vesica may or may not have a median spinose projection of variable form; the secondary gonopore is always a semicircular opening on the "inner" surface of the vesical shaft with a field of spicules subtending it distally; vesica apically simple to variously elaborated; phallotheca more or less rectilinear, relatively complex distally; left paramere strongly splayed out (figs. 7–9, 12–14, 19–21). Female genitalia with bulging posterior wall characteristic of Pilophorini (Schuh, 1974; see also Discussion).

TYPE SPECIES: *Ambonea opima* Odhiambo.

DISTRIBUTION: Figures 2, 3. Malaya, New Guinea, northern Australia, Philippine Islands, eastern and southern Africa.

DISCUSSION: Odhiambo (1960) placed *Ambonea* in the Pilophorini, following Wagner by not defining the tribe on the basis of antlike appearance. The characters which he used, male genitalia, appear to be synapomorphic for the Pilophorini. Nonetheless, all other diagnostic characters of *Ambonea* appear to be the absence of characters that diagnose other taxa, e.g., the non-antlike form,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NEGROS
MINDANAO
SABAH
MALAYA
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
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JAVA
TIMOR
AUSTRALIA
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5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 2. Distribution of *Ambonea* sp. *A. ifugao* (▲) and unidentified specimens (○).

the abdomen not constricted at the base, and the second antennal segment cylindrical and not noticeably enlarged. These characteristics will allow for recognition of a group of species very similar in form to *Hypseloecus visci* (Puton); whether this assemblage is monophyletic will require more detailed character analysis within the Pilophorini and a more critical search for the sister group.

ADDITIONAL SPECIMENS: Ten male specimens representing more species apparently assignable to *Ambonea* exist in collections. The condition of most of these is too poor to permit accurate description. Although they show little external morphological variability, they demonstrate considerable diversity in the male genitalia. One specimen from Papua New Guinea (Bishop) has no spine on the vesical shaft, whereas individual specimens representing two species from Malaya (BMNH) have one and two spines on the vesical shaft. Another specimen from Malaya

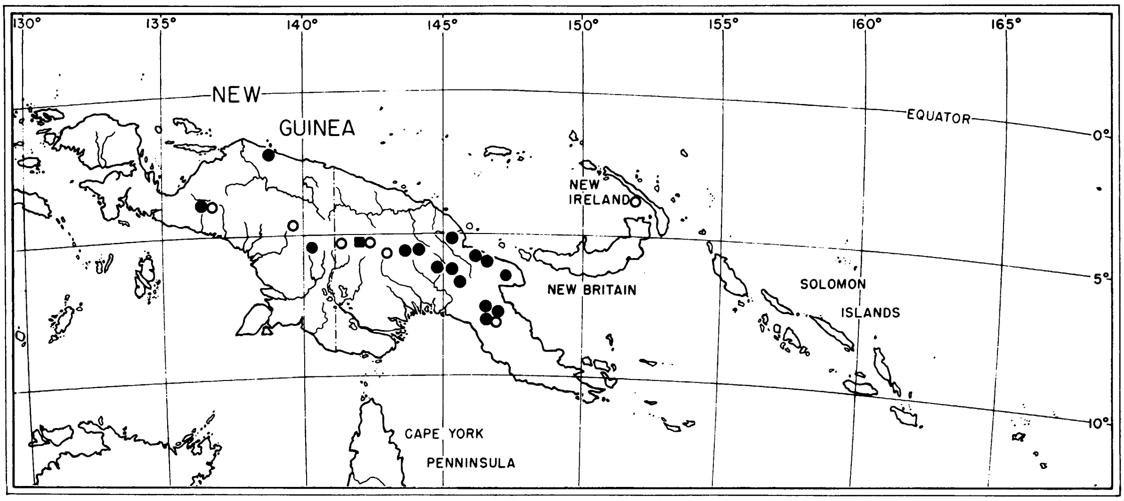


FIG. 3. Distribution of *Ambonea* spp. *A. koroba* (■); *A. morobe* (●); unidentified specimens (○).

(Bishop) has no spine on the vesical shaft, as is the case in two specimens from the Philippine Islands (Bishop). Of the four remaining specimens, one is from Irian Jaya (Bishop), one from New Ireland (Copenhagen), and two from Papua New Guinea (Bishop).

Twenty-four female specimens, representing several species from the following localities are deposited in the indicated museums: Burma (1, USNM). Indonesia: Irian Jaya (1, Bishop); Sumatra (2, AMNH). Laos (6, Bishop). Malaysia: Sabah (2, Bishop); Sarawak (2, Bishop). Papua New Guinea (9, Bishop). Thailand (1, Bishop).

A single female specimen is available from northern Queensland, Australia (BMNH).

Ambonea ifugao, new species

Figures 2, 4, 7–9

DIAGNOSIS: Recognized by the reddish and reddish brown coloration, the coloration of antennal segment two (dark brown on proximal one-fifth and distal two-fifths, light reddish in between), and the form of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.01, width pronotum 1.17; general coloration similar to *morobe*; antennal segment two dark brown on proximal one-fifth and distal two-fifths, light reddish in between; procoxae white.

Surface texture and vestiture similar to *morobe*.

Structurally similar to *morobe*; labium slightly surpassing posterior margin of metatrochanters.

MALE GENITALIA: Figures 7–9. Vesical shaft with a heavy bifid mesial spine, apex complexly elaborated; phallotheca with a weak dorsal elaboration, apex elongate, snoutlike.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Ifugao, Luzon, Philippine Islands, the type locality; a noun in apposition.

DISTRIBUTION: Figure 2. Philippine Islands.

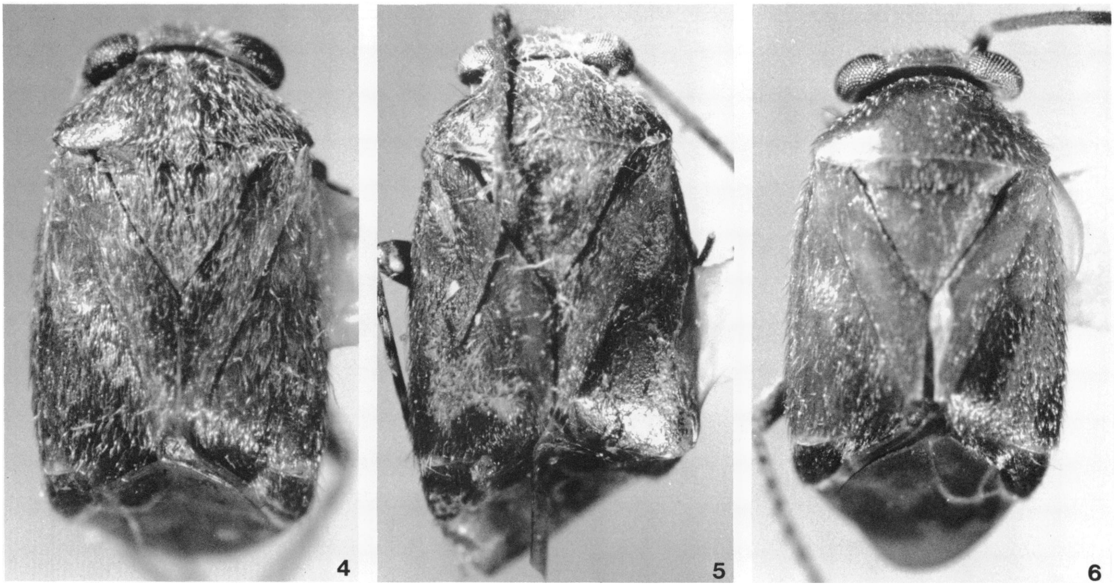
HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Ifugao Prov., Jacmal Bunhian, 24 km. E of Mayoyao, 800–1000 m., April 30, 1967, light trap, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

Ambonea koroba, new species

Figures 3, 5, 10–14

DIAGNOSIS: Recognized by its relatively large size, the almost uniformly blood red dorsum, the uniformly reddish second antennal segment, and the form of the male genitalia.

DESCRIPTION: Macropterous male. Length



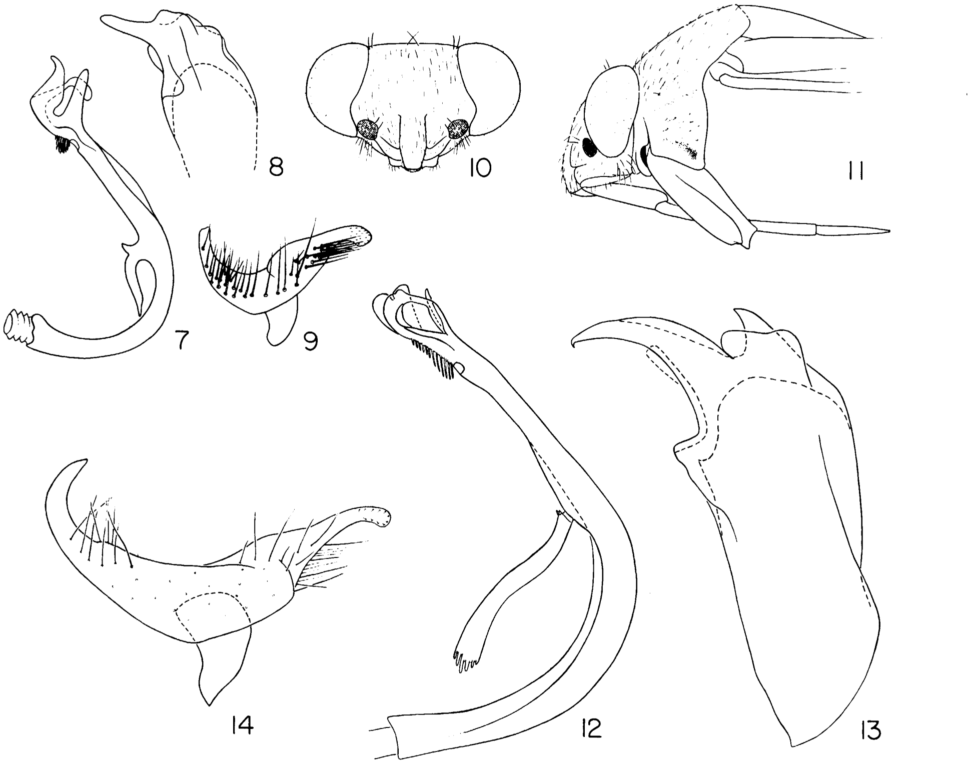
Figs. 4–6. *Ambonea* spp. 4. *A. ifugao,* holotype. 5. *A. koroba,* holotype. 6. *A. morobe,* holotype.

apex tylus-cuneal fracture 2.96, width pronotum 1.65; body less rectangular in appearance than in *ifugao* and *morobe* (fig. 5); general coloration blood red, antennae and venter somewhat darker than dorsum; extreme proximal area of antennal segment three, bucculae, posterior portion of genae, prosternal xyphus, margin of all acetabulae, scent-gland auricle and evaporatory area, and all trochanters white; all femora with scattered white patches, apparently associated with bases of spines and trichobothria; all tibiae yellowish with red bands; all tarsi light proximally, infuscate distally; membrane infumate, outer vein of large cell red, vein dividing cells and most of posterior margin of smaller cell white (fig. 5).

Dorsum smooth, dull, covered with woolly, subappressed, sericeous pubescence and reclining, brown, common setae (fig. 5); remainder of body covered with patches of appressed, flattened, sericeous setae and reclining, brown, common setae; antennal vestiture as in *morobe.*

Head transverse as viewed from above, eyes somewhat bulging, frons weakly protruding, posterior margin of eyes not conforming closely to anterior margin of pronotum as in *morobe* and *ifugao* (fig. 5); ventral margin of antennal fossae extending below ventral margin of eyes, fossae contiguous with eyes, inner margin of eyes strongly emarginate above fossae (fig. 5); antennal structure as in *morobe*; eyes occupying about two-thirds of height of head; tylus weakly projecting; bucculae narrow, buccal cavity ovoid; gula obsolete; labium attaining apex of metacoxae; pronotum inclined posteriorly, rounded transversely, lateral margins nearly straight with a single erect, fine spine, humeral angles smoothly but rather sharply rounded, posterior margin very weakly concave across mesoscutum; mesoscutum exposed, separated from scutellum by a rather deep, straight transverse impression; scutellum weakly humplike; hemelytra transversely conspicuously convex, lateral margins distinctly curving on anterior one-third; cuneal fracture nearly straight and perpendicular to costal margin, cuneal incisure rather deep, costal margin of cuneus convex; outer margin of veins of membrane angulate (fig. 5); otherwise as in *morobe* except metatarsal segment one distinctly shorter than either segments two or three.

Male Genitalia: Figures 12–14. Vesica with a large spinelike projection on shaft, apically with several finger-like projections; phallotheca acuminate apically, dorsally with one spinelike and one flaplike elaboration.



FIGS. 7–14. 7–9. *Ambonea ifugao*. 7. Vesica. 8. Phallotheca. 9. Left paramere. 10–14. *Ambonea koroba*. 10. Frontal view of head, ♂. 11. Lateral view of head and prothorax, ♂. 12. Vesica. 13. Phallotheca. 14. Left paramere.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality, Koroba, Papua New Guinea; a noun in apposition.

DISTRIBUTION: Figure 3. Papua New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Southern Highlands Prov.*: Koroba, 40 km. W of Tari, 1650 m., September 19, 1963, R. Straatman collector; deposited in the B. P. Bishop Museum, Honolulu.

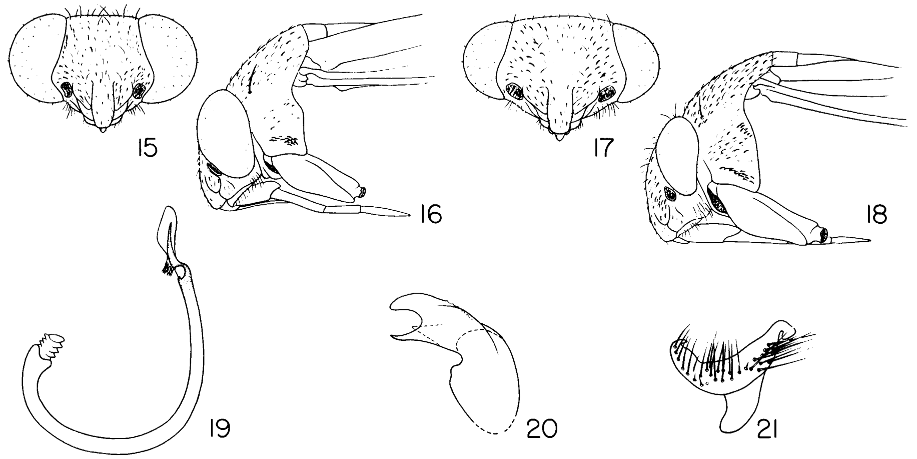
Ambonea morobe, new species

Figures 3, 6, 15–21, 22–27

DIAGNOSIS: Recognized by its reddish and reddish brown coloration, the coloration of antennal segment two (yellowish on proximal three-fourths, dark on distal fourth), and by the form of the male genitalia.

DESCRIPTION: Macropterous male. Body form rectangular, length tylus-apex cuneal fracture 2.23, width pronotum 1.32; general coloration deep reddish to reddish brown, somewhat mottled, membrane irregularly infumate, veins of membrane whitish; proximal three-fourths of antennal segment two dirty yellow; all coxae and scent-gland evaporatory area white; pro- and meso-femora mottled with yellow white distally; all tibiae yellow-white with red bands formed by red bases of black tibial spines; all tarsi yellow-white.

Body surface smooth, very weakly shining; dorsum covered with reclining, brown, common setae, and recumbent, woolly sericeous setae (figs. 23, 24); frons, thoracic pleura, and abdominal venter (except genital capsule) covered with regularly spaced patches of a few appressed, flattened, sericeous setae; abdominal venter, including genital capsule, also



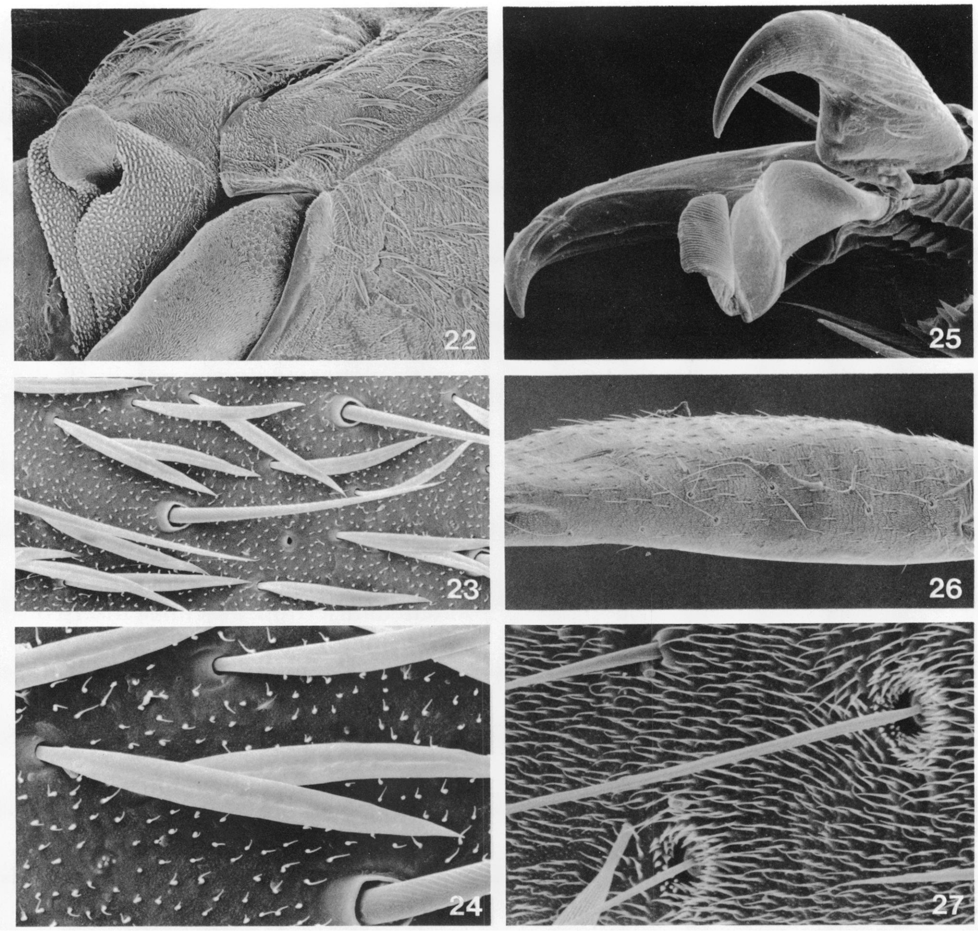
FIGS. 15–21. *Ambonea morobe*. 15. Frontal view of head, ♂. 16. Lateral view of head and prothorax, ♂. 17. Frontal view of head, ♀. 18. Lateral view of head and prothorax, ♀. 19. Vesica. 20. Phallotheca. 21. Left paramere.

with reclining fine common setae; antennal segment one with a few erect dark spines on inner surface, remaining segments with short, neat, recumbent vestiture with some longer suberect setae; genae with some erect pale setae, tibiae with clusters of reclining black spines slightly longer than tibial diameter.

Head transverse as viewed from above, posterior margin (including eyes) conforming closely to contour of anterior pronotal margin, anterior–posterior dimension of eye greater than median length of head (fig. 6); posterior margin of vertex vertical, carinate, weakly excavated; eyes occupying about three-fourths of height of head in lateral view (fig. 16); antennae inserted at ventral margin of eyes, eyes moderately emarginate above antennal insertion, antennal fossae contiguous with inner margins of eyes (fig. 15); antennal segment one short, length equal to about one-half of width of vertex, not enlarged, length of segment two slightly less than width of head, nearly cylindrical, increasing slightly in diameter distally, segments three and four together about as long as segment two, subequal in diameter, diameter about one-half that of segment two; bucculae narrow, buccal cavity oval, gula obsolete; labium reaching to posterior margin of mesosternum; pronotum smoothly and gently convexly rounded transversely and longitudinally, lateral margins convexly rounded, an erect fine spine placed midway between anterior margin and humeral angle, calli not demarcated, humeral angles broadly rounded, posterior margin nearly straight across mesoscutum; mesoscutum rather broadly exposed, separated from scutellum by a nearly straight, deep, uniform transverse impression; scutellum weakly convex; hemelytra only weakly transversely convex; costal margin very weakly sinuous; claval commissure short; cuneal fracture weakly sinuous and weakly angled anteromesially, cuneal incisure shallow, lateral cuneal margin weakly convex; margin of veins of membrane weakly angulate (fig. 6); metathoracic scent-gland evaporatory area as in figure 5; pro- and meso-femora elongate rectangular, more or less parallel-sided, metafemora somewhat enlarged with straight ventral surface and rounded dorsal surface; metafemora with eight trichobothria arranged as in figure 26; all tibiae tubular; metatarsal segments one, two, and three of more or less equal length; claws smoothly and strongly rounded on dorsal surface, broadened basally, pulvilli absent, parempodia lamellate, recurved, convergent apically (fig. 25).

MALE GENITALIA: Figures 19–21. Vesical shaft without a median spine, apex membranous, simple; phallotheca L-shaped, dorsal elaboration very greatly developed and projecting to level of apex.

FEMALE: Macropterous. Similar to male except eyes smaller, vertex relatively wider and



FIGS. 22–27. *Ambonea morobe*. 22. Lateral view of metathorax. 23. Surface of hemelytron. 24. Detail of hemelytral setae. 25. Pretarsus. 26. Metafemur, showing trichobothria. 27. Detail of metafemoral trichobothria.

genae occupying a greater proportion of height of head (figs. 17, 18); antennal segment two of smaller diameter than in male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Morobe Province, Papua New Guinea; a noun in apposition.

DISTRIBUTION: Figure 3. New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Morobe Prov.:* Mt. Kaindi, September 18, 1972, mercury vapor light trap, G. G. E. Scudder collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: INDONESIA: *Irian Jaya:* Wisselmeren, Kamo-Debei divide, 1700 m., August 13, 1955 (Gressitt; Bishop), 1♂; Hol Maffen, 22 km. E of Sarmi, July 18–19, 1959 (Maa; Bishop), 1♂. PAPUA NEW GUINEA: *Chimbua Prov.:* Daulo Pass, Asaro-Chimbu divide, 2800 m., June 14, 1955 (Gressitt; Bishop), 1♀. *Eastern Highlands Prov.:* Wonenara, 6°40′S, 145°55′E, 1450 m., July 14, 1966, light trap (Gressitt and Wilkes; Bishop), 1♂; NE slopes of Mt. Michael, Kimi Creek Camp, 1980 m., August 29, 1959 (Brass; AMNH), 1♀. *Madang Prov.:* Adelbert Mountains, Wanuma, 800–1000 m., October 27, 1958 (Gressitt; Bishop), 1♂; Finisterre Mountains, Damanti, 3550 feet, October 2–11, 1964 (Bacchus; BMNH), 2♂♂; Finisterre Mountains, Moro, *ca.* 5500 feet, October 30–November 15, 1964 (Bacchus; BMNH), 3♂♂, 3♀♀. *Morobe Prov.:* Sepalakambang, Salawaket Range, 1920 m., September 12, 1956, light trap (Ford; Bishop), 1♂; Wau, 1200–1300 m., July 12–30, 1961, September 26–27, 1964 (Sedlacek; Bishop), 3♂♂; Wau, August 12–14, 1972, September 9–11, 1972, 8–10 P.M., mercury vapor light trap (Scudder; AMNH, Bishop), 7♂♂; Wau, 1200 m., August 13, 1961, light trap (Sedlacek; Bishop), 1♀; Wau, Big Wau Creek, 1300 m., December 30, 1964 (Gressitt; Bishop), 1♀; Wau, Edie Creek, 1900 m., October 4–10, 1961 (Sedlacek; Bishop), 1♀. *Western Highlands Prov.:* Laiagam, 2180 m., June 18–19, 1963, mercury vapor light trap (Sedlacek; Bishop), 2♀♀; 6.4 km. W of Wabag, 2020 m., June 13, 1963 (Sedlacek; AMNH, Bishop), 2♀♀. *Province unknown:* Feramin, 120–150 m., May 23–31, 1959 (Brandt; Bishop), 1♂; Kepilam, 2400 m., June 20–23, 1963 (Sedlacek; AMNH, Bishop), 3♂♂, 4♀♀; Eliptamin Valley, July 1–30, 1959, 1200–2530 m. (Brandt; AMNH, Bishop), 2♂♂, 1♀.

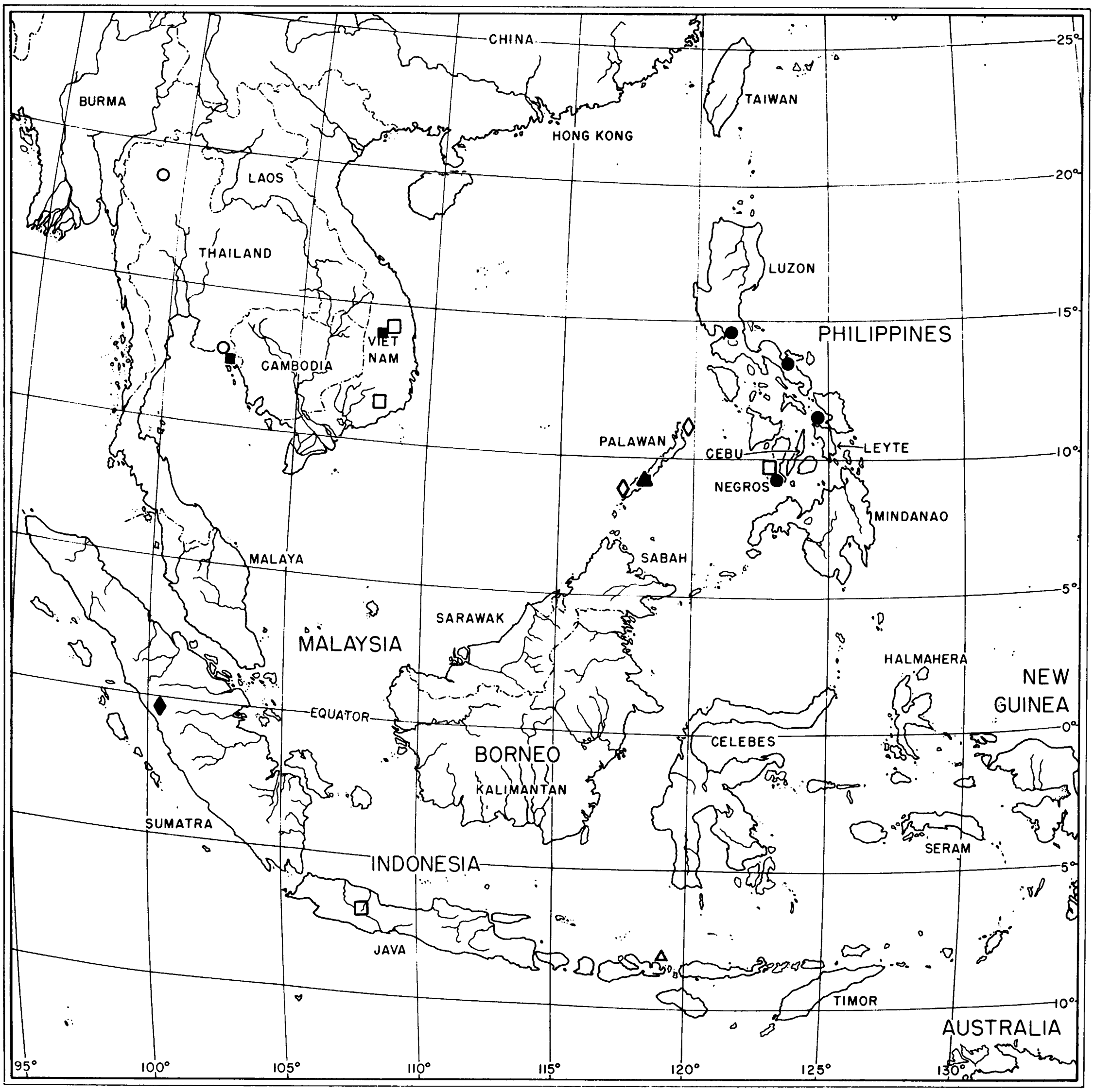
BILIRANIA CARVALHO

Bilirania Carvalho, 1956a, p. 215; Schuh, 1974, p. 306.

DIAGNOSIS: Recognized by the suite of characters common to most Pilophorini including the lamellate, recurved, apically convergent parempodia, the transverse bands of sericeous scalelike setae on the hemelytra, and the form of the male and female genitalia, as well as the mesially constricted pronotum which does not bear conelike protuberances on the anterior lobe (as found in *Biliranoides*) and the long usually flattened and dark setae covering the vertex (except in *sundae*).

DESCRIPTION: Macropterous male. Antlike, small- to moderate-sized (figs. 38–40, 50–52), range length apex tylus-cuneal fracture 2.55–2.86, range width pronotum 0.81–1.00; dark colored; dorsum smooth, mostly dull or weakly shining, some areas highly polished; vertex with very long, weakly flattened, usually dark-colored setae (except in *sundae*), pronotum with short recumbent setae and sometimes longer erect setae, hemelytra with a mixture of reclining common setae, shining, scattered, golden setae, and at least two transverse bands of appressed sericeous scalelike setae (fig. 31), one on corium at the level of the apex of the scutellum, the other across the corium and clavus a distance equal to one-fourth the length of the corium anterior to the cuneal fracture (fig. 39); frons with reclining common setae, gula with some rather heavy erect setae; pronotum with an erect seta on anterolateral angles; antennae with very short, neat, reclining pubescence; abdomen with reclining common setae; tibial spines short, weak on protibiae, heavier on meso- and meta-tibiae.

Head transverse as viewed from above, greatly elongated dorsoventrally (figs. 53, 54, 60, 61), concave behind vertex and eyes, posteromesial angle of eyes contiguous with anterior margin of pronotum; vertex weakly curved and strongly dorsoventral in orientation, posterior margin rather sharply carinate; eyes occupying slightly over one-half of height of head, very weakly emarginate at antennal insertion, antennae inserted slightly below middle of eyes (figs. 53, 54, 60, 61), antennal segment one cylindrical, length about equal to width of vertex, segment two long, usually noticeably increasing in diameter distally, segments three and four relatively short, of length about equal to or only slightly greater than that of segment one; tylus nearly flat, not protruding, lora weakly carinate (figs. 53, 54, 60, 61), genae broad, vertical in orientation, concave or convex, gula moderately long to very long, inclined to nearly vertical (figs. 54, 61); bucculae narrow, buccal cavity about twice as long as broad, more or less ovate; labium just surpassing apices of procoxae; pronotum constricted mesially, either necklike or anterior lobe largely confluent with posterior lobe, anterior lobe narrow relative to posterior, somewhat boxlike, posterior lobe strongly elevated, tumid (figs. 38–40, 50–52, 54, 61), anterior margin as in figure 32; mesoscutum broadly exposed, mesoscutum and scutellum elevated, transversely rounded, rather steeply declining posteriorly, scutellum flattened apically; hemelytra weakly transversely rounded in *sundae* (fig. 52), distinctly rounded transversely in other species (figs. 38–40, 50, 51); exocorium reflexed ventrally and not visible from above (except in *sundae*), lateral corial margins sinuous, width narrowest just posterior to apex of scutellum, greatest just anterior to cuneal fracture, these features not so accentuated in *sundae*; cuneal fracture weak-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SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
INDONESIA
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TIMOR
AUSTRALIA
25°
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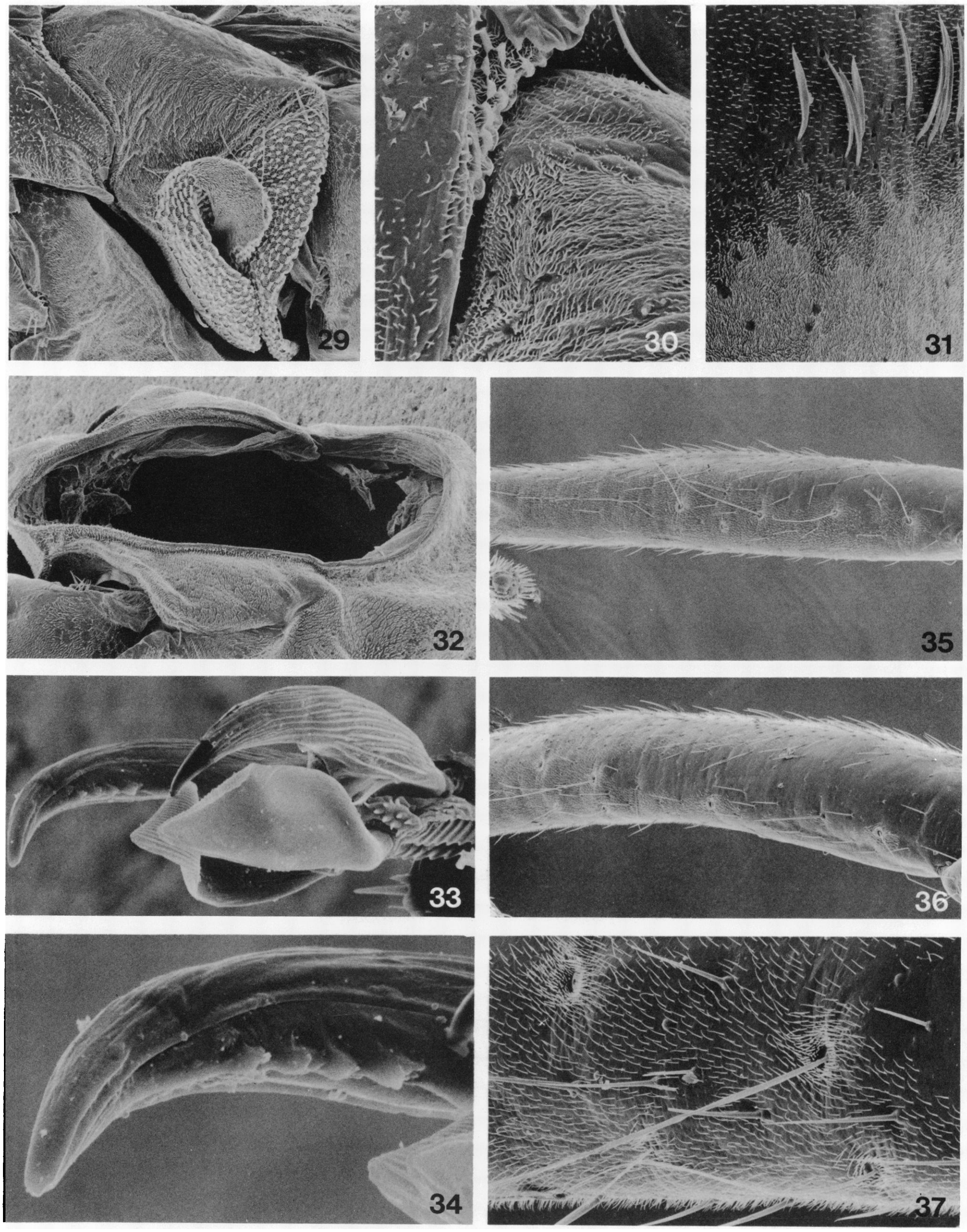
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 28. Distribution of *Bilirania* and *Biliranoides* spp. *Bilirania maculata* (○); *Bilirania myrmecoides* (●); *Bilirania palawana* (▲); *Bilirania pleiku* (■); *Bilirania sumatrana* (◆); *Bilirania sundae* (△); unidentified *Bilirania* spp. (□) also from Sri Lanka; *Biliranoides culion* (◇).

ly angled to nearly perpendicular to lateral corial margin, cuneal incisure deep, cuneus rounded laterally, cells of membrane with broadly and smoothly rounded margin, metathoracic scent-gland evaporatory area as in figure 29; small evaporatory area dorsad of scent gland as in figure 30; all femora elongate, more or less cylindrical, six mesofemoral, seven metafemoral trichobothria (figs. 35–37); tibiae ranging from cylindrical to strongly flattened; metatarsal segment one short, segments two and three subequal in length, about two times length of segment one; outer surface of clavus smoothly and strongly rounded, ventral surface with a series of denticles, base broad, pulvilli absent, parempodia lamellate, recurved, convergent apically (figs. 33, 34).

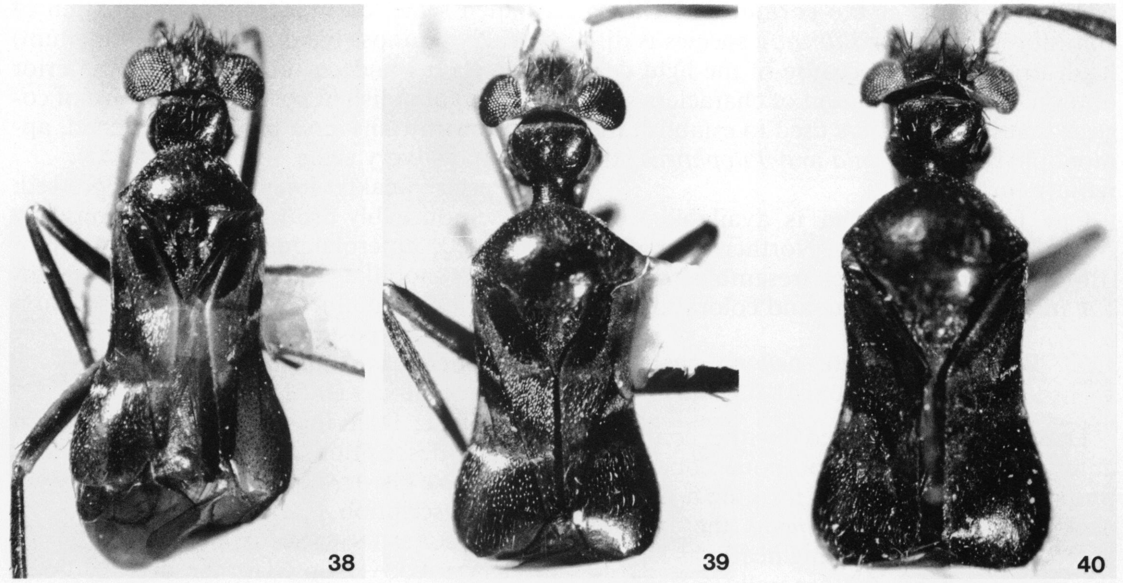
MALE GENITALIA: Vesica usually more or



FIGS. 29–37. *Bilirania* sp., ♀. Pekalongan, Java. 29. Lateral view of metathorax. 30. Detail of small metathoracic evaporatory area. 31. Detail of hemelytron at midpoint of corium. 32. Anterior pronotal margin. 33. Pretarsus. 34. Detail of claw. 35. Mesofemur, showing trichobothria. 36. Metafemur showing trichobothria. 37. Detail of metafemoral trichobothria.

less J-shaped with a simple apical membranous elaboration, sometimes roughly L-shaped and sclerotized apically; vesical shaft without ornament, or with a median spine or spur, and often with series of spicules subtending secondary gonopore; phallotheca nearly straight, with a dorsal projection; left paramere weakly to strongly splayed out.

FEMALE: Macropterous. General surface



FIGS. 38–40. *Bilirania* spp. 38. *B. maculata,* holotype. 39. *B. myrmecoides,* ♂, Philippine Islands, Negros, Dumaguete. 40. *B. palawana,* holotype.

texture and structure as in male, eyes somewhat smaller and vertex relatively wider.

FEMALE GENITALIA: Posterior wall with bulge characteristic of Pilophorini.

TYPE SPECIES: *Bilirania myrmecoides* Carvalho.

DISTRIBUTION: Figure 28. Philippine Islands, Viet Nam, Thailand, Java, Sumatra, Sri Lanka, and Australia.

DISCUSSION: Schuh (1974) tentatively placed *Bilirania* in the Leucophoropterini. Examination of specimens clearly assignable to the genus leaves no doubt, now, that *Bilirania* belongs to the Pilophorini, based on the structure of the male and female genitalia, the parempodia, and the vestiture. *Bilirania* is remarkably antlike in appearance. Unfortunately, no information is available on its habitat or habits.

ADDITIONAL SPECIMENS: A single teneral male specimen of *Bilirania* is available from Sri Lanka (Lund). The anterior and posterior lobes of the pronotum are confluent, not being separated by a distinctive neck; the second antennal segment does not increase in diameter distally. The dorsum is generally covered with long, erect, common setae, the vertex more densely; the remaining characteristics of surface texture and vestiture are as in the described species of the genus. Antennal segment two is white proximally; the procoxae are totally brown.

Four female specimens representing *Bilirania* species are also available. The genitalia of one of these from Viet Nam (Bishop) (possibly representing *B. pleiku*) are the basis for the above comments. Two specimens from Java (headless; CAS) and Viet Nam (Bishop) possibly represent undescribed species, but fit well within the range of morphological variation indicated for the described species.

One female specimen from Negros Island in the Philippines (AMNH) is distinctive. Most interesting are the very long necklike constriction of the pronotum (constriction nearly as long as posterior pronotal lobe), the very light yellow-brown general coloration with the posterior one-fourth of the hemelytra and the membrane castaneous, and the surface texture and vestiture. The setae on the vertex are long and numerous, but relatively light colored and not distinctly flattened; the scutellum has flattened, sericeous setae laterally and across the apex; the distinctive patch of shining, appressed, golden setae on the clavi just posterior to the apex of the scutellum as found in all other *Bilirania* species is not present. The pruinose banding pattern on the corium and clavus common to all other *Bilirania* species is difficult to distinguish because of the light coloration. This combination of characters suggests that the characters used to establish the monophyly of *Bilirania* and *Pilophorus* still require further study.

One female specimen is available from Australia, from Darwin, Northern Territory (BMNH); it rather closely resembles *B. sundae* in pronotal structure and coloration.

Bilirania maculata, new species

Figures 28, 38, 41–43

DIAGNOSIS: Recognized by the confluent anterior and posterior pronotal lobes, the pronotal constriction not forming a distinct neck as also found in *sundae,* the anterior lobe of the pronotum being nearly as long as the posterior lobe, the generally castaneous coloration with a large contrasting light claval macula just posterior to the apex of the scutellum, and the distinctive L-shaped vesica.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.69, width pronotum 0.84; general coloration castaneous to brown black; clavus just posterior to apex of scutellum with a large yellow-white round macula; proximal one-half of antennal segment two, proximal two-thirds of procoxae, distal one-third of meso- and meta-coxae and all trochanters white; vertex along mesial margin of eyes and anterior to posterior margin, interior surface of profemora, apices of meso- and meta-femora, protibiae, and all tarsi light brown; antennal segment one and proximal portion of antennal segment two lighter than distal two-thirds of segment two.

Dorsal surface of pronotum, scutellum, and two transverse bands across hemelytra dull, generally pruinose; head, posterior one-third of corium, cuneus, and thoracic and abdominal venter polished and shining; clavus at level of scutellum and corium and clavus (narrowly) posterior to level of scutellum glabrous, smooth, indistinctly pruinose; vertex and most of frons covered with very long, dark brown, erect, weakly flattened setae; genae with numerous very long, erect, heavy, dark-colored setae; light-colored macula on clavus covered with recumbent, shining, golden setae; corium (at anterior margin of weakly pruinose band posterior to scutellum) and clavus and corium at level of anterior margin of polished posterior one-third of corium with transverse bands of flattened, appressed silvery setae.

Vertex weakly longitudinally depressed; jugae noticeably protruding, genae convexly rounded; anterolateral angles of pronotum weakly knoblike, anterior and posterior pronotal lobes confluent, pronotal constriction not necklike, posterior pronotal margin very weakly concave; all tibiae cylindrical.

MALE GENITALIA: Figures 41–43.

FEMALE: Differing from male as noted in generic description.

FEMALE GENITALIA: Not examined. See generic description.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the large light-colored macula on the clavus.

DISTRIBUTION: Figure 28. Thailand.

HOLOTYPE ♂: THAILAND (SE): Bangpra, 25 m., November 23, 1957, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: THAILAND: *Chanthaburi Prov.:* Prew, 45 m., April 25–30, 1958 (Maa; Bishop), 1♂, *Chiangmai Prov.:* Chiangmai, May 28, 1952, at light (Thurman; USNM), 1♀.

Bilirania myrmecoides Carvalho

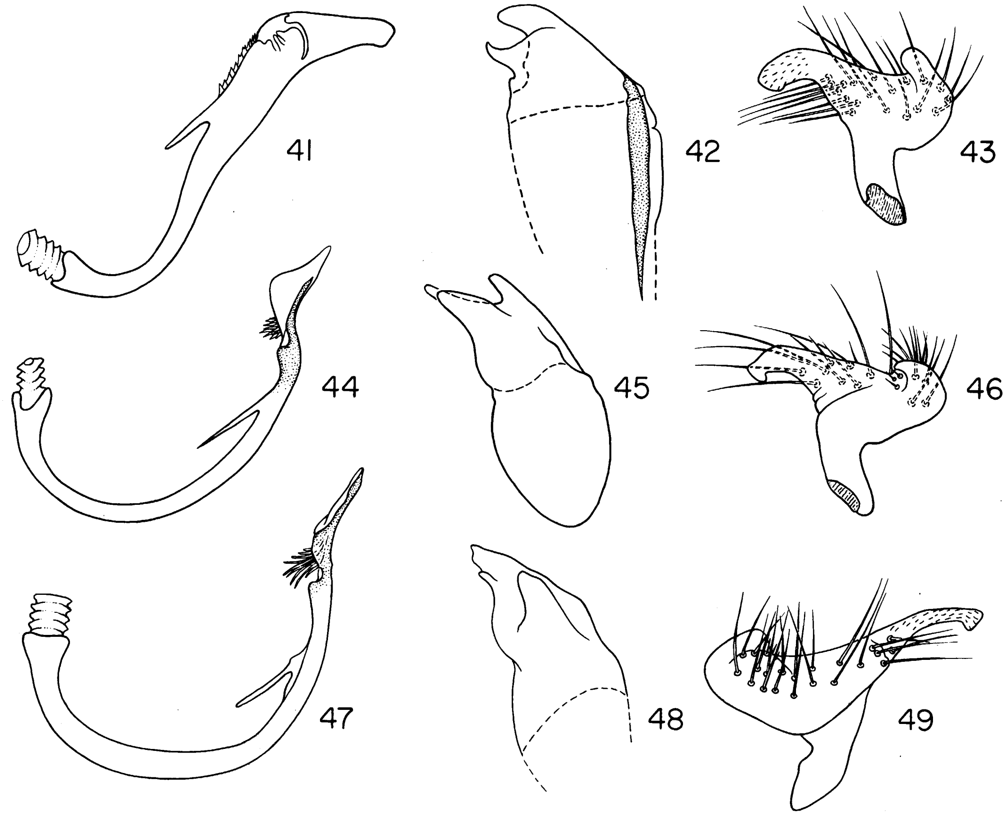
Figures 28, 39, 44–46

Bilirania myrmecoides Carvalho, 1956a, p. 216.

DIAGNOSIS: Recognized by the necklike constriction of the pronotum, the generally castaneous coloration, and the form of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.68, width pronotum 0.91; general coloration, surface texture and vestiture as in *maculata,* except as follows: antennal segment two more or less unicolorous maroon, segment one white ventrally, maroon dorsally; clavus without large light macula posterior to scutellum; genae with a few long, dark-colored, erect setae.

Vertex weakly transversely depressed anterior to posterior margin, jugae only weakly protuberant, genae shallowly concave; an-



FIGS. 41–49. *Bilirania* spp., male genitalia. 41–43. *B. maculata*. 41. Vesica. 42. Phallotheca. 43. Left paramere. 44–46. *B. myrmecoides*. 44. Vesica. 45. Phallotheca. 46. Left paramere. 47–49. *B. palawana*. 47. Vesica. 48. Phallotheca. 49. Left paramere.

terolateral pronotal angles not knoblike, posterior margin of pronotum weakly sinuously curved across mesoscutum; protibiae cylindrical, mesotibiae weakly flattened, metatibiae strongly flattened.

MALE GENITALIA: Figures 44–46.

FEMALE: Macropterous. Differing from male as noted in generic description.

FEMALE GENITALIA: See generic description.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 28. Philippine Islands.

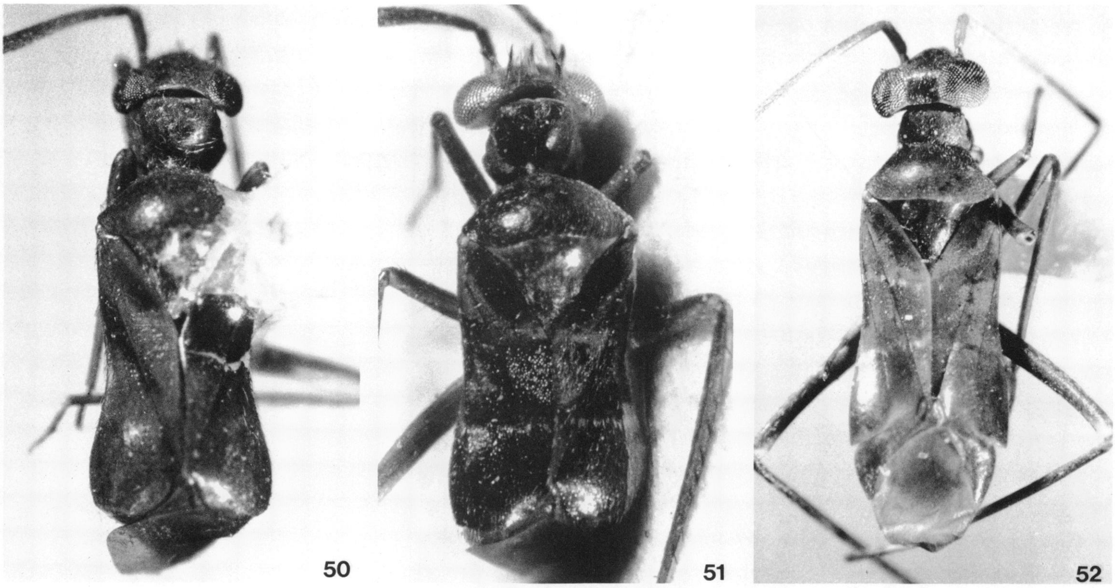
SPECIMENS EXAMINED: PHILIPPINE ISLANDS: *Biliran Island* (Baker; USNM), 1♂ (holotype). *Luzon:* Camarines Sur, Mt. Isarog, Pili, 800 m., April 28, 1965, light trap (Torrevillas; Bishop), 1♂; Rizal Prov., Montalban Dam, March 16, 1960, sweeping (Maa; Bishop), 1♀. *Negros Island:* Dumaguete, Camp Lookout, February 15–April 15, 1961 (Schneirla and Reyes; AMNH), 2♂♂.

Bilirania palawana, new species

Figures 28, 40, 47–49

DIAGNOSIS: Recognized by the short necklike constriction of the pronotum, the nearly black general coloration, and the form of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.82, width pronotum 1.00; general coloration dull black; proximal one-half of antennal segment three, proximal one-half of procoxae, distal one-half of meso- and meta-coxae, and meso- and meta-trochanters white or nearly so; remainder of legs and antennae castaneous to light brown (hind legs missing in both known spec-



FIGS. 50–52. *Bilirania* spp. 50. *B. pleiku,* holotype. 51. *B. sumatrana,* holotype. 52. *B. sundae,* holotype.

imens); vertex above antennal fossae and along inner margin of eyes, jugae, lora, genae posterior to eye, and apex of scutellum yellowish tinged with castaneous.

Surface texture and vestiture very similar to *maculata.*

Vertex with a weak longitudinal elevation; jugae very weakly protruding above lora; genae weakly concave; pronotal constriction forming a short neck; anterior pronotal lobe weakly depressed longitudinally, anterolateral angles of pronotum weakly knoblike, posterior pronotal margin distinctly concave across mesoscutum; pro- and meso-tibiae cylindrical.

MALE GENITALIA: Figures 47–49.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the island of Palawan, Philippine Islands.

DISTRIBUTION: Figure 28. Palawan, Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Palawan Island:* Mantalingajan, Pinigisan, 600 m., September 1961, Noona Dan Expedition; deposited in the University Zoological Museum, Copenhagen.

PARATYPE: Same data as holotype but September 7, 1961 (Copenhagen), 1♂.

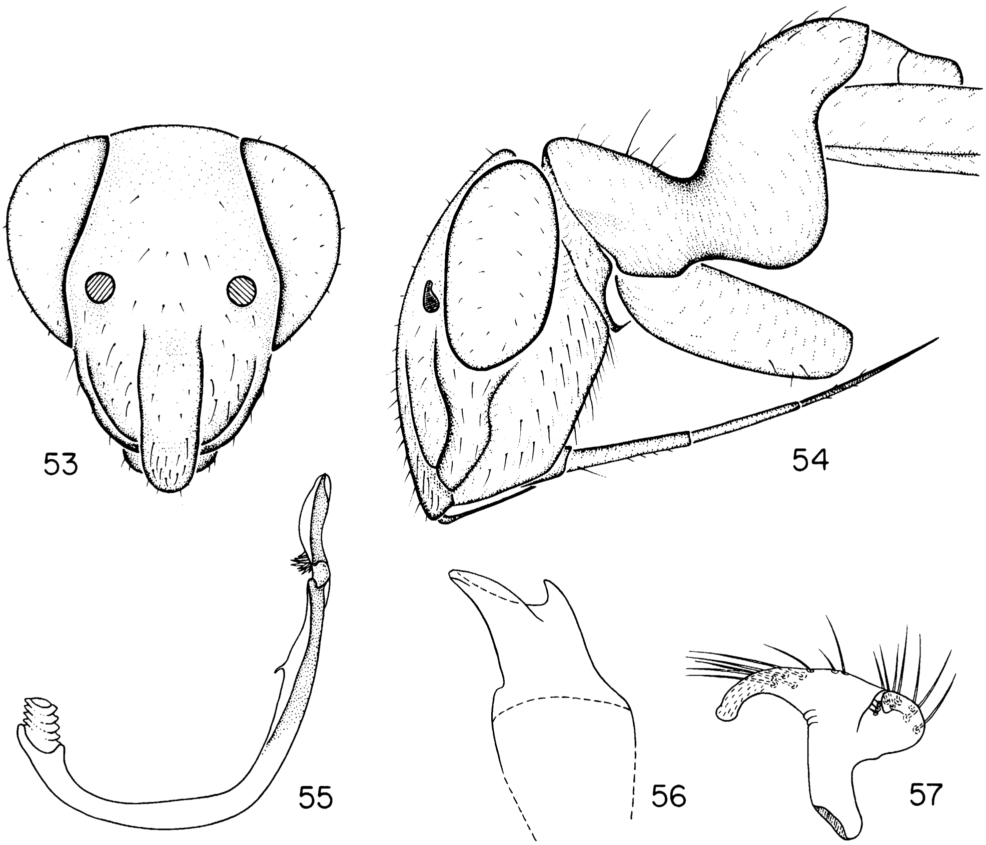
Bilirania pleiku, new species
Figures 28, 50, 53–57

DIAGNOSIS: Recognized by the very short necklike constriction of the pronotum, the face below the eyes nearly as long as the height of an eye, the general mahogany coloration, and the form of the male genitalia. The long, flattened hairs are not present on the vertex of known specimens, but appear to have been rubbed, as is the rest of the vestiture.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.72, width pronotum 0.98; general coloration mahogany, sometimes tending to reddish; proximal one-half of antennal segment three white; antennal segment one ventrally, procoxae proximally, meso- and meta-coxae distally, and meso- and meta-trochanters dirty white; all tibiae and tarsi yellowish.

Surface texture and vestiture as in *maculata* except as follows: vertex possibly with less distinctly flattened and elongate setae than in other species, genae with some erect black setae, anterior lobe of pronotum with some suberect shaggy pubescence.

Jugae distinctly protruding above finely carinate lora; genae distinctly concave; face below eyes nearly as along as height of eye;



FIGS. 53–57. *Bilirania pleiku.* 53. Frontal view of head. 54. Lateral view of head and prothorax. 55. Vesica. 56. Phallotheca. 57. Left paramere.

anterior lobe of pronotum rather strongly longitudinally depressed behind anterior margin, necklike constriction very short, posterior margin of pronotum weakly angulate across mesoscutum; pro- and meso-tibiae cylindrical, metatibiae weakly flattened.

MALE GENITALIA: Figures 55–57. Projection on shaft of vesica in the form of a short spur.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the Vietnamese city of Pleiku; a noun in apposition.

DISTRIBUTION: Figure 28. Thailand, Viet Nam.

HOLOTYPE ♂: VIET NAM: 20 km. N of Pleiku, 650 m., May 9, 1960, L. W. Quate collector; deposited in B. P. Bishop Museum, Honolulu.

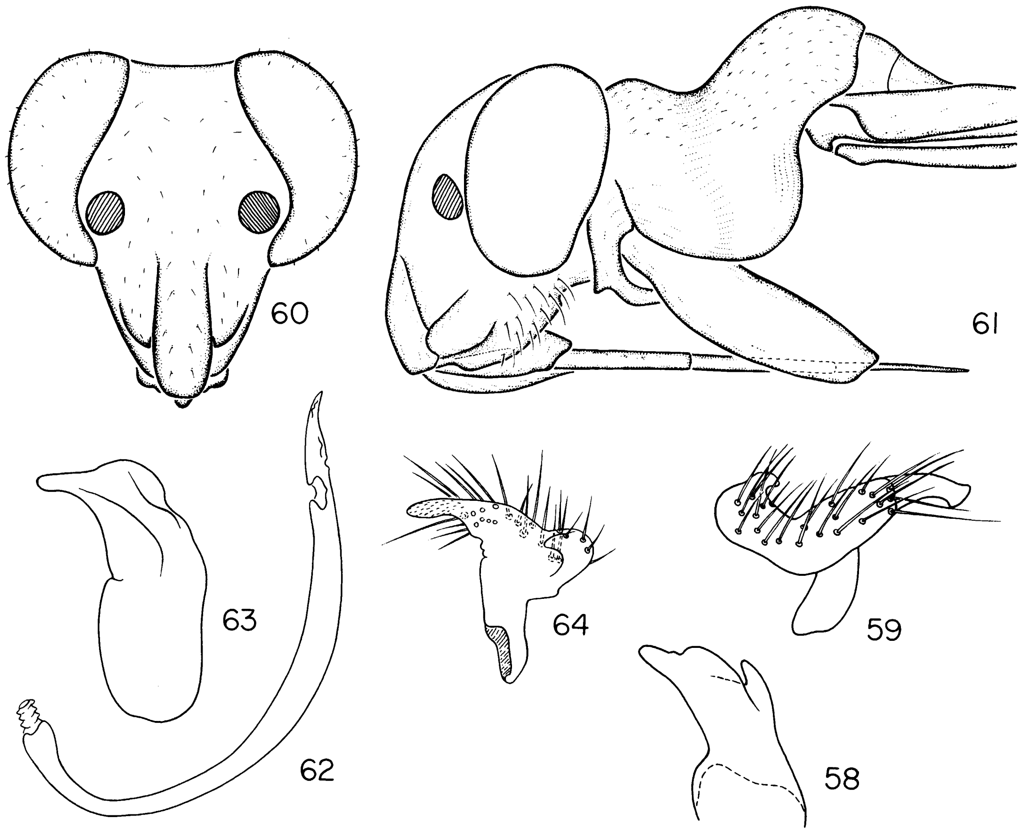
PARATYPES: THAILAND: *Chanthaburi Prov.:* Prew, April 25–30, 1958 (Maa; Bishop), 1♂. *Chiangmai Prov.:* Mae Klang, 340 m., June 11, 1965 (Ashlock; AMNH), 1♂.

Bilirania sumatrana, new species

Figures 28, 51, 58, 59

DIAGNOSIS: Recognized by the short, necklike constriction of the pronotum, the generally castaneous coloration, the distinctly longitudinal depression completely separating the calli on the anterior lobe of the pronotum, and the form of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.60, width pronotum 0.91; general coloration castaneous, legs, antennae, and inner margin of eyes somewhat lighter; proximal one-third of antennal seg-



FIGS. 58–64. 58, 59. *Bilirania sumatrana*. 58. Phallotheca. 59. Left paramere. 60–64. *Bilirania sundae*. 60. Frontal view of head. 61. Lateral view of head and prothorax. 62. Vesica. 63. Phallotheca. 64. Left paramere.

ment one, proximal two-thirds of procoxae, meso- and meta-coxae distally and meso- and meta-trochanters white; all tarsal segments one and two nearly white, all tarsal segments three castaneous; genae nearly yellow with red spots.

Surface texture and vestiture as in *maculata*; genae with scattered moderately long black setae.

Vertex with distinctive Y-shaped depression running from posterior margin at inner margin of eyes to point somewhat above level of antennal insertion (ecdesial line?); jugae distinctly protruding over lora; genae more or less flat; anterior lobe of pronotum with a conspicuous longitudinal depression completely separating calli; necklike constriction of pronotum about as long as greatest diameter of antennal segment two, posterior margin of pronotum weakly but distinctly sinuous across mesoscutum; pro- and mesotibiae cylindrical, metatibiae weakly flattened.

MALE GENITALIA: Figures 58, 59. Vesica partially destroyed during dissection; left paramere rather strongly flattened, as in *palawana*.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on Sumatra.

DISTRIBUTION: Figure 28. Sumatra.

HOLOTYPE ♂: INDONESIA: *Sumatra:* west coast, Padang, May 2, 1926, K. E. Jacobson collector; deposited in Rijksmuseum van Natuurlijke Historie, Leiden.

PARATYPE: Same data as holotype (Leiden), 1♂.

Bilirania sundae, new species

Figures 28, 52, 60–64

DIAGNOSIS: Recognized by the confluent anterior and posterior lobes of the pronotum, the pronotal constriction not forming a distinct neck (as in *maculata*), the anterior lobe of the pronotum being about one-half the length of the posterior lobe, the generally brownish coloration with no distinctive markings on the hemelytra, the lateral margins of the hemelytra only weakly sinuous in contrast to the condition found in other described species, the cylindrical second antennal segment, the apparent absence in the only known specimen of long, erect, flattened setae on the vertex, and the form of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.78, width pronotum 0.92; general coloration brown, most of head, pronotum, scutellum, thoracic pleura, and metafemora dark, hemelytra and most of appendages somewhat lighter, proximal two-fifths of antennal segment three white, contrasting, procoxae, distal one-half of metacoxae, and meso- and meta-trochanters whitish, distoventral area of metafemur light.

Entire surface of body generally smooth, dull; dorsum rubbed in only known specimen, but with at least some short, subappressed, pale, simple setae and the remnants of at least two transverse bands of scalelike sericeous setae; hemelytra with transverse pruinose bands anterior to rows of scalelike setae; gula with a few erect, heavy, black setae.

Vertex depressed, posterior margin straight, jugae nearly flat, genae nearly flat, gula inclined, about as long as diameter of antennal segment one; labium reaching to posterior margin of mesosternum; anterior margin of pronotum nearly straight, pronotum with a shallow mesial depression just posterior to anterior margin, pronotal constriction, weak, not forming a distinct neck, anterior lobe of pronotum about one-half length of and largely confluent with posterior lobe, posterior lobe weakly tumid, posterior margin weakly concavely angulate; mesoscutum and scutellum elevated, separated by a weak, sinuous, transverse impression, scutellum weakly transversely rugulose; lateral corial margins weakly sinuous, anterior portion only weakly reflexed ventrally, corium not expanded on posterior one-half; protibiae enlarged slightly distally, meso- and meta-tibiae cylindrical.

MALE GENITALIA: Figures 62–64. Vesica without mesial spine or spur, secondary gonopore not subtended by spicules.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in the Lesser Sunda Islands.

DISTRIBUTION: Figure 28. Sangeang Island, Lesser Sunda Islands, Indonesia.

HOLOTYPE ♂: INDONESIA: *Lesser Sunda Islands:* Sangeang Island, August 23, 1965, J. Winkler collector; deposited in the B. P. Bishop Museum, Honolulu.

DISCUSSION: The presence of long, erect, dark setae on the vertex is the single character which I have found to be unique to the genus *Bilirania*. Since these setae are apparently absent in *sundae*, its placement in the genus is provisional.

BILIRANOIDES, NEW GENUS

DIAGNOSIS: Recognized by suite of characters common to most Pilophorini, including the lamellate, recurved, apically convergent parempodia, the transverse bands of sericeous scalelike setae on the hemelytra, the form of the male genitalia, and by the pronotum which is strongly constricted anteriorly and which has a pair of erect conical protuberances in the position of the calli.

DESCRIPTION: Macropterous male. Antlike, moderate-sized, range length apex tylus-cuneal fracture 2.90–3.00, range width pronotum 0.84–0.97; dark colored; dorsum smooth or finely rugulose, dull or weakly shining, some areas polished; dorsal pubescence variable, consisting at least in part of some long, erect, common setae and some recumbent setae, as well as two transverse bands of appressed, sericeous, scalelike setae, one on the corium at the level of the apex of the scutellum, the other across the corium and clavus a distance equal to one-fourth the length of the corium anterior to the cuneal fracture (fig. 70); frons and vertex with some erect common setae and several pairs of trichobothrium-like setae; gula with some long, erect, black setae (fig. 66); anterior lobe of pronotum with a pair of long erect fine spines placed laterally on the conical protuberances; antennae with very short, neat, reclining setae; abdomen with reclining common setae; femora with several erect spines on dorsal surface; protibiae with a few weak spines, meso- and meta-tibiae with several short, semierect black spines.

Eyes greatly removed from anterior margin of pronotum, head behind eyes strongly narrowed (fig. 70); vertex and frons smoothly convexly rounded, posterior margin of vertex forming a fine, posteriorly directed carina across anterior margin of pronotum, broadly rounded between pronotal angles and eyes; eyes occupying about one-half height of head, anterior margin weakly emarginate at antennal insertion, antennae inserted at lower one-third of eye, fossae slightly removed from margin of eyes (figs. 65, 71); antennal segment one cylindrical, length equal to about one-half width of vertex, segment two long, distal diameter about two times proximal, segments three and four combined about as long as segment two, very slender (fig. 70); jugae protruding over carinate lora (figs. 66, 72); bucculae about as broad as diameter of labial segment two, buccal cavity tapering posteriorly to carinate gula; genae concave, broad, nearly vertical in orientation (fig. 72); labium relatively short, reaching to about apices of procoxae; pronotum strongly constricted mesially, anterior lobe narrowed, anterior one-fourth of anterior lobe broadly collar-like but anterior margin finely reflexed and upturned, calli elevated, in the form of two conical protuberances (figs. 66, 70, 72); posterior pronotal lobe tumid; mesoscutum very broadly exposed; scutellum weakly inflated anteromesially, flattened apically; lateral corial margins sinuous, exocorium reflexed ventrally, not visible from above, hemelytra narrowest at point just posterior to apex of scutellum, widest just anterior to cuneal fracture; cuneal fracture perpendicular to lateral corial margin, incisure deep, lateral margin of cuneus rounded; outline of veins of membrane somewhat angular; all femora elongate, slender, cylindrical; meso- and meta-femoral trichobothriae not critically investigated (see fig. 70); protibiae cylindrical, meso- and metatibiae strongly flattened (fig. 70); tarsal segments two and three subequal in length, segment one about one-half length of segment two; claws smoothly and rather strongly curved on outer surface, broadened basally, pulvilli absent, parempodia lamellate, recurved, and convergent apically.

MALE GENITALIA: Vesica without spine on shaft in known species (fig. 67), with apical membranous elaboration, and spicules subtending gonopore; phallotheca with a weak dorsal protuberance (fig. 68); left paramere somewhat flattened and in at least some species with a dorsal projection (fig. 69).

FEMALE: Macropterous. Similar to male except eyes somewhat smaller and vertex relatively wider.

FEMALE GENITALIA: Not examined.

TYPE SPECIES: *Biliranoides kathleenae,* new species.

ETYMOLOGY: Named for its similarity to *Bilirania*; feminine.

DISTRIBUTION: Figure 28. Philippine Islands.

DISCUSSION: The conical pronotal protuberances of *Biliranoides* might suggest a relationship with *Nicostratus* Distant, *Surinamella* Carvalho and Rosas, 1962, and *Xanchisme* Kirkaldy, a characteristic also found in the genus *Saldoida* Osborn (Saldidae); nonetheless, the male and female genitalia, the sericeous scalelike setae, and the form of the parempodia all clearly indicate it is a member of the Pilophorini. Nothing is known of the habitat or habits of these unusual mimetic bugs.

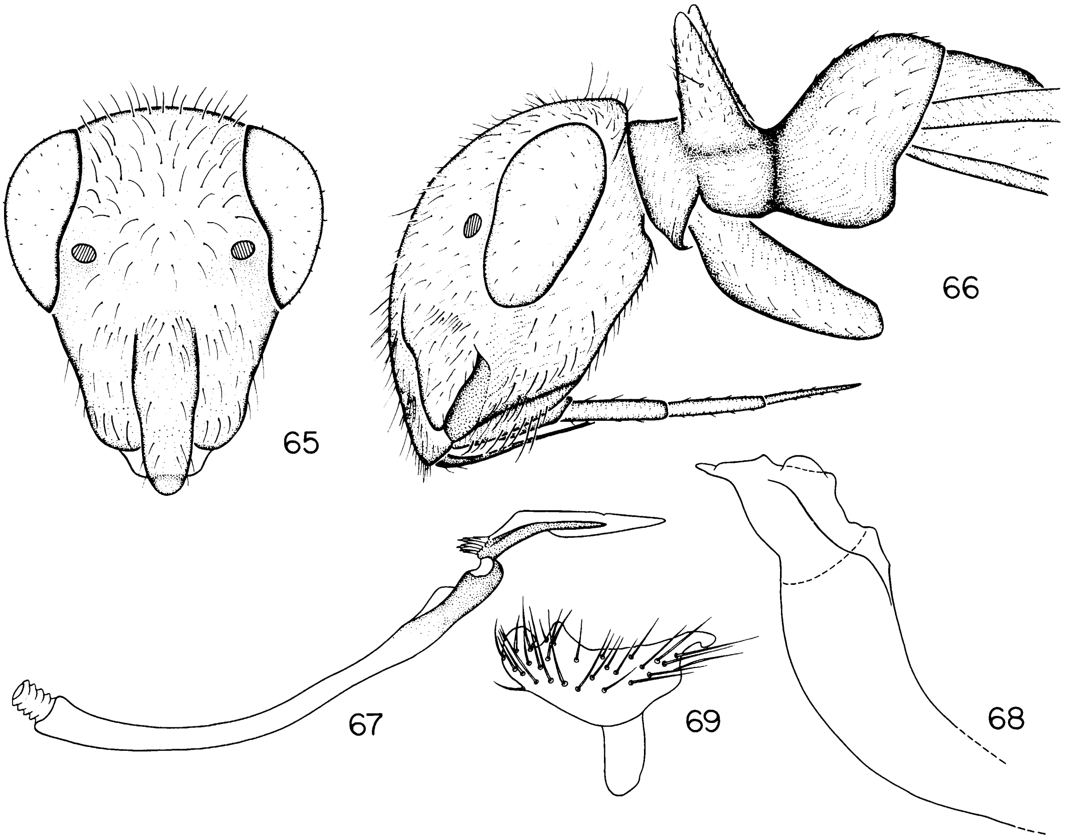
Biliranoides culion, new species

Figures 28, 65–69

DIAGNOSIS: Recognized by the characters in the generic diagnosis, and the straight pronotal protuberances (fig. 66).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.90, width pronotum 0.97; general coloration mahogany to castaneous, except as follows: antennal segment one dark except for broad interior light stripe, antennal segment three white on basal one-third, apex of tylus and entire lora white, all coxae mostly white, all trochanters white, protibae light on distal two-thirds, procoxae nearly white, all other legs missing in holotype.

Pattern and type of pubescence basically as



Figs. 65–69. *Biliranoides culion.* 65. Frontal view of head. 66. Lateral view of head and prothorax. 67. Vesica. 68. Phallotheca. 69. Left paramere.

in *kathleenae*; gula with rather densely set, moderately long, curving, erect, dark brown setae.

Jugae strongly protruding, lora very weakly carinate, clypeus and jugae compressed as in figures 65 and 66; conical pronotal protuberances straight, not bent apically; posterior margin of pronotum nearly straight across mesoscutum.

Male Genitalia: Figures 67–69.

Female: As in generic description.

Measurements: See Appendix.

Etymology: Named for its occurrence on Culion Island, Philippine Islands; a noun in apposition.

Distribution: Figure 28. Philippine Islands.

Holotype ♂: PHILIPPINE ISLANDS: *Calamian Group:* Culion Island, San Pedro, March 19, 1947, H. Hoogstraal collector; deposited in the Field Museum of Natural History, Chicago.

Additional Specimen Examined: PHILIPPINE ISLANDS: *Palawan Island:* 3 km. NE of Tinabog, May 15, 1962 (Holtman; Bishop), 1♀.

Biliranoides kathleenae, new species

Figures 28, 70–72

Diagnosis: Recognized by the characters in the generic diagnosis and the posteriorly bent apices of the pronotal protuberances (figs. 70–72).

Description: Macropterous male. Length apex tylus-cuneal fracture 3.00, width pronotum 0.84; head, pronotum, mesoscutum, scutellum cuneus, and posterior one-fourth of corium castaneous; anterior three-fourths of corium and clavus chocolate brown; ap-

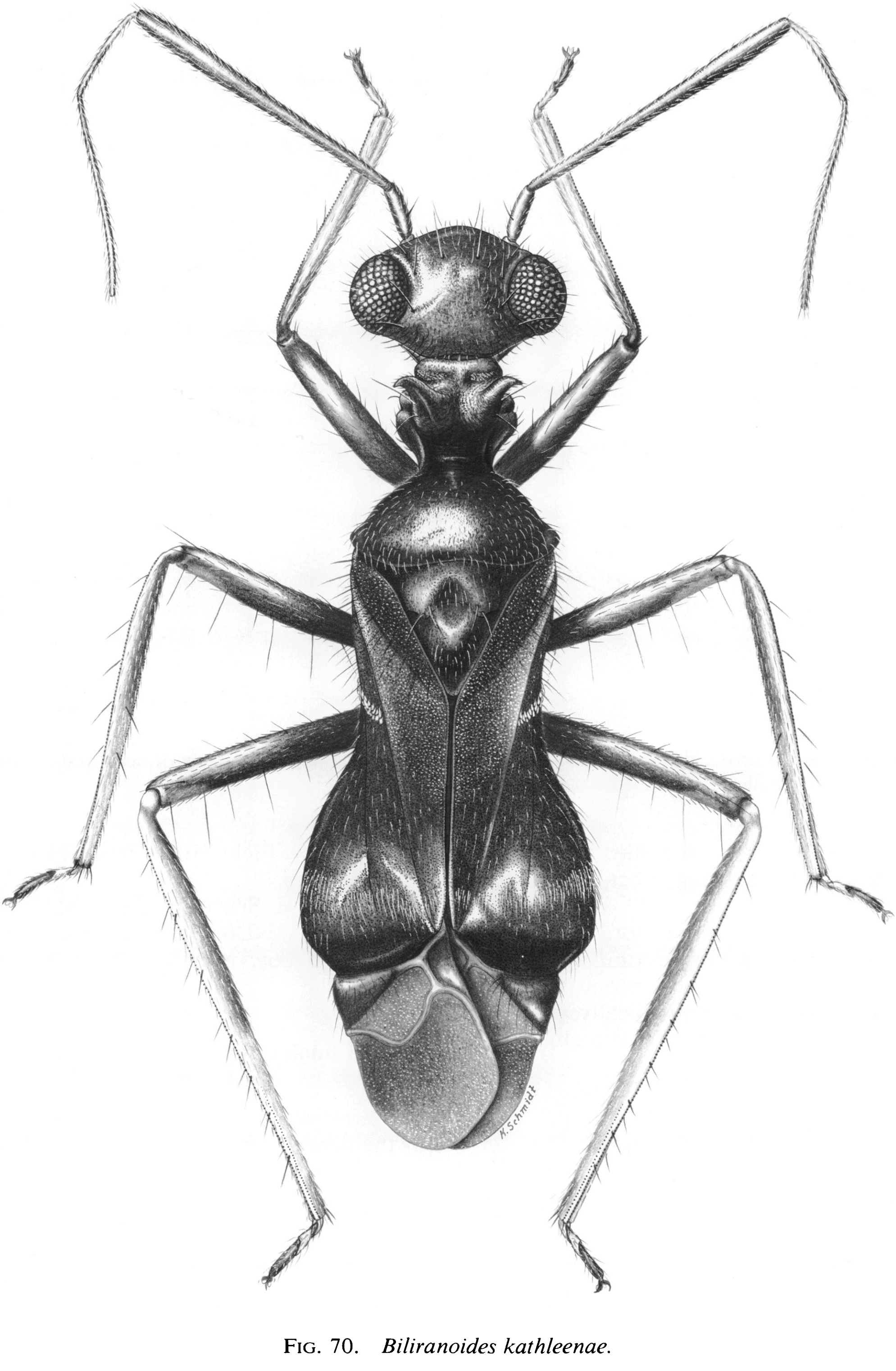
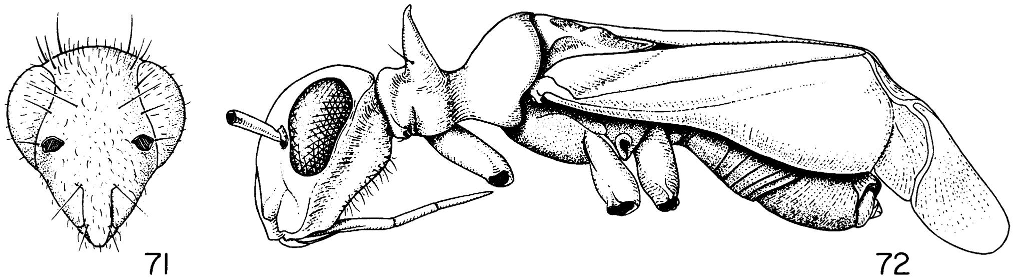


FIG. 70. *Biliranoides kathleenae.*



FIGS. 71, 72. *Biliranoides kathleenae*. 71. Frontal view of head. 72. Lateral view.

pendages generally maroon except as follows: antennal segment one nearly white except for an interior maroon stripe; proximal one-half of antennal segment three white, meso- and meta-coxae and meso- and meta-trochanters white, all tibiae light distally, all tarsal segments one and two light, and all tarsal segments three castaneous.

Pattern and type of pubescence on dorsum as shown in figure 70; gula with a few moderately long erect, curving black setae. Conical pronotal protuberances angled posteriorly at apex; posterior margin of pronotum obliquely, concavely angulate across mesoscutum; mesoscutum depressed mesially.

MALE GENITALIA: Not examined.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Kathleen Schmidt.

DISTRIBUTION: "Carat."

HOLOTYPE ♂: [INDONESIA?]: "Carat," 12-07; deposited in the California Academy of Sciences (Type No. 14256).

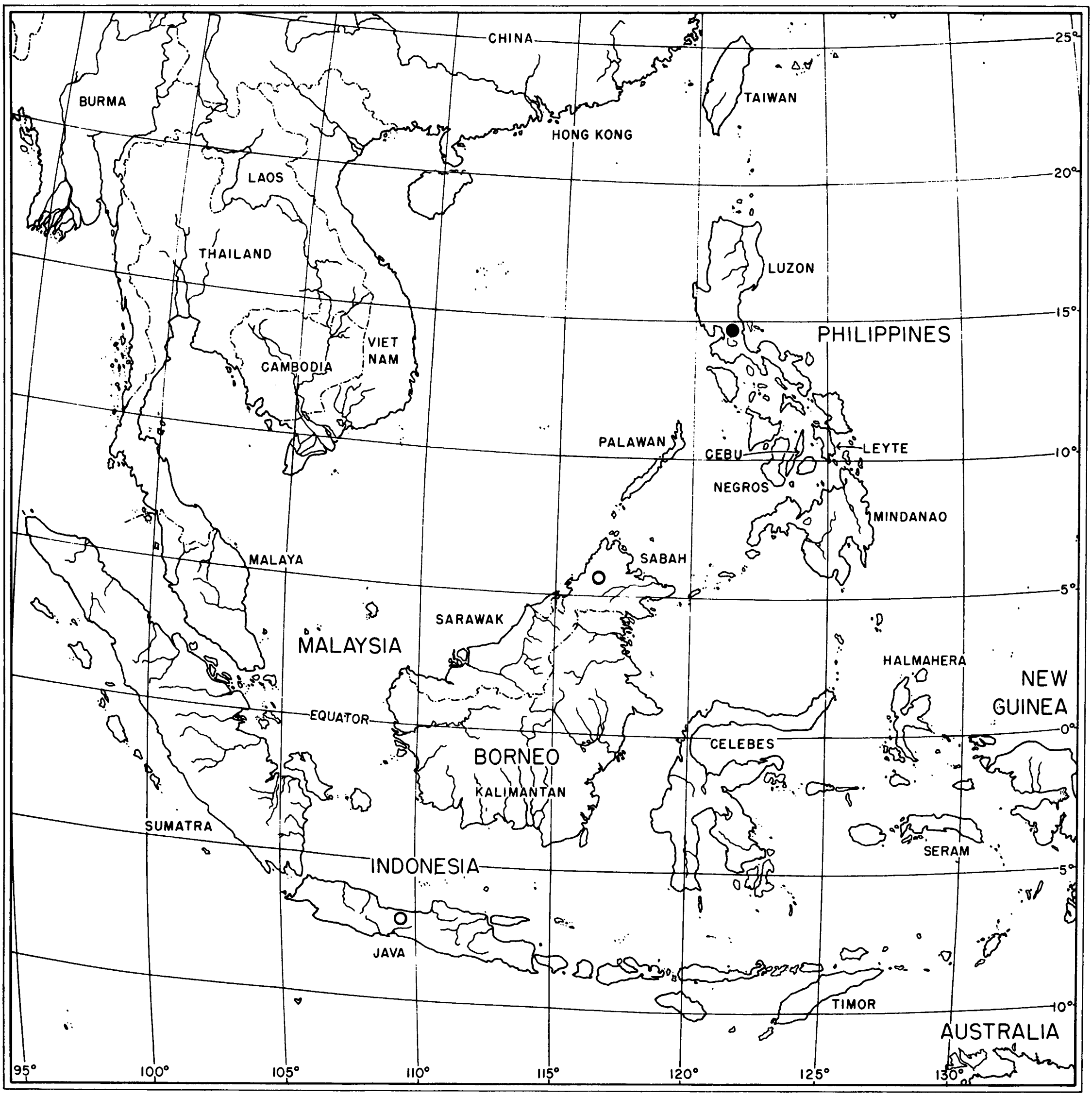
DRUTHMARUS DISTANT

Druthmarus Distant, 1909a, p. 452; Distant, 1910b, p. 245.

DIAGNOSIS: Recognized by the suite of characters common to most Pilophorini, including the presence of some flattened sericeous setae (most obvious on the pronotal pleuron and abdomen) and the form of the male and female genitalia, the lamellate, recurved, apically convergent parempodia as well as the enlarged second antennal segment which ranges from terete to almost boxlike, and the jet-black coloration in all known species.

DESCRIPTION: Macropterous male. Small- to medium-sized, stout-bodied, range length apex tylus-cuneal fracture 2.00–2.76, range width pronotum 0.97–1.33; black; proximal one-third of antennal segment three and procoxae white; elongate, ovate or parallel-sided, body surface smooth, dull to weakly shining; scutellum transversely rugulose; protibiae without spines, meso- and meta-tibiae with some reclining black spines about as long as tibial diameter; posterior margin of abdominal sternite two with patches of scalelike setae laterally (fig. 80).

Head transverse as viewed from above (figs. 74, 75), frons weakly rounded and slightly projecting anterior to eyes; vertex strongly inclined, posterior margin carinate, vertical, weakly curved; eyes in lateral view occupying about one-half of length of head and two-thirds to three-fourths of height of head; antennae inserted at level of ventral margin of eyes, antennal fossae slightly removed from inner margin of eyes (figs. 81, 82); antennal segment one short, stout, more or less cup-shaped, segment two enlarged, terete to nearly boxlike (figs. 74, 75, 85), segments three and four slender, subequal in diameter, short, combined length about equal to length of segment two; bucculae narrow, buccal cavity broadly ovate, gula short, steeply inclined; genae forming a weak, rounded carina below eyes; labium reaching to between apices of pro- and meso-coxae; pronotum weakly transversely convex, gently declining anteriorly, lateral margins straight, posterior margin shallowly convex across mesoscutum; mesoscutum exposed; scutellum weakly transversely convex; hemelytra nearly straight sided and broadening slightly posteriorly, or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TAIWAN
HONG KONG
LAOS
THAILAND
LUZON
PHILIPPINES
VIET NAM
CAMBODIA
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
SABAH
MALAYA
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
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5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 73. Distribution of *Druthmarus* spp. *D. coxalis* (○); *D. philippinensis* (●); also *D. magnicornis* from Sri Lanka.

weakly convex; cuneal fracture obliquely angled anteromesially; cuneal incisure distinct, but shallow; outline of veins of membrane weakly angulate; metathoracic scent-gland evaporatory area as in figure 76; all femora very elongate ovate, mesofemora with six, metafemora with seven trichobothria (figs. 78, 79); all tibiae cylindrical or nearly so; metatarsal segments two and three subequal in length, segment one short, about one-half length of segment two; outer surface of claws strongly and evenly curved, broadened basally, ventral surface of claw with a series of low denticles (as in *Bilirania*), pulvilli absent, parempodia lamellate, recurved, convergent apically (fig. 77).

MALE GENITALIA: Vesica tubular, C-shaped, with a median spine on shaft, apically with a membranous elaboration, secondary gonopore subtended by a series of spicules (fig. 86); phallotheca L-shaped, distal portion short (fig. 87); left paramere splayed out (fig. 88).

FEMALE: Macropterous. Very similar to male, eyes slightly smaller, vertex relatively wider, and eyes occupying a lesser portion of height of head (figs. 83, 84).

FEMALE GENITALIA: Posterior wall with bulge characteristic of Pilophorini.

TYPE SPECIES: *Druthmarus magnicornis* Distant.

DISTRIBUTION: Figure 73. Sri Lanka, Java, Borneo, Philippine Islands, and the Congo [?] (see Carvalho, 1951).

DISCUSSION: Carvalho (1951) described *Druthmarus congolensis* from Africa (Banza, Mazola). The shape of antennal segment two and the scalelike pubescence argue for placement in *Druthmarus.* The holotype female has no tarsi. Thus, definitive placement can only be made by dissection of the female genitalia or collection of additional specimens.

Druthmarus coxalis (Reuter), new combination

Figures 73, 74

Atractotomus coxalis Reuter, 1891, p. 136.

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the rather boxlike second antennal segment, the relatively large size, and the white distal one-third of the protibiae.

DESCRIPTION: Macropterous male. Relatively large, length apex tylus-cuneal fracture 2.76, width pronotum 1.33; black, proximal one-third of antennal segment three, procoxae, distal two-thirds of pro- and meso-tibiae, and all tarsal segments one and two white; head below eyes, excluding tylus, highly polished and shining.

Posterior margin of vertex forming a sharply rounded carina, posterior margin of eyes distinctly removed from anterior pronotal margin; eyes occupying about three-fourths of height of head; gula very short; labium reaching to posterior margin of mesosternum; lateral corial margins straight, parallel.

MALE GENITALIA: Not examined.

FEMALE: As in generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 73. Java, Northern Borneo.

SPECIMENS EXAMINED: INDONESIA: *Java* (Helsinki): 1♀ (holotype). MALAYSIA: *Sabah Prov.:* Tenompok, 48 km. E of Jesselton, February 10–19, 1959 (Maa; Bishop), 1♂, 1♀.

DISCUSSION: Examination of the holotype of *coxalis* indicates that it is a member of the Pilophorini, not an *Atractotomus* species, and that it is congeneric with *magnicornis* Distant.

Druthmarus magnicornis Distant

Druthmarus magnicornis Distant, 1909a, p. 453.

DIAGNOSIS: Separated from *coxalis* by its possession of unicolorous dark protibiae, in common with *philippinensis,* and from *philippinensis* by its larger size and more strongly inflated second antennal segment.

DESCRIPTION: Macropterous female. Length apex tylus-cuneal fracture 2.00; width pronotum 1.03; very similar in coloration and structure to *philippinensis,* except body somewhat shorter and stockier and antennal segment two more greatly enlarged.

FEMALE GENITALIA: Not examined.

MALE: Unknown.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Sri Lanka.

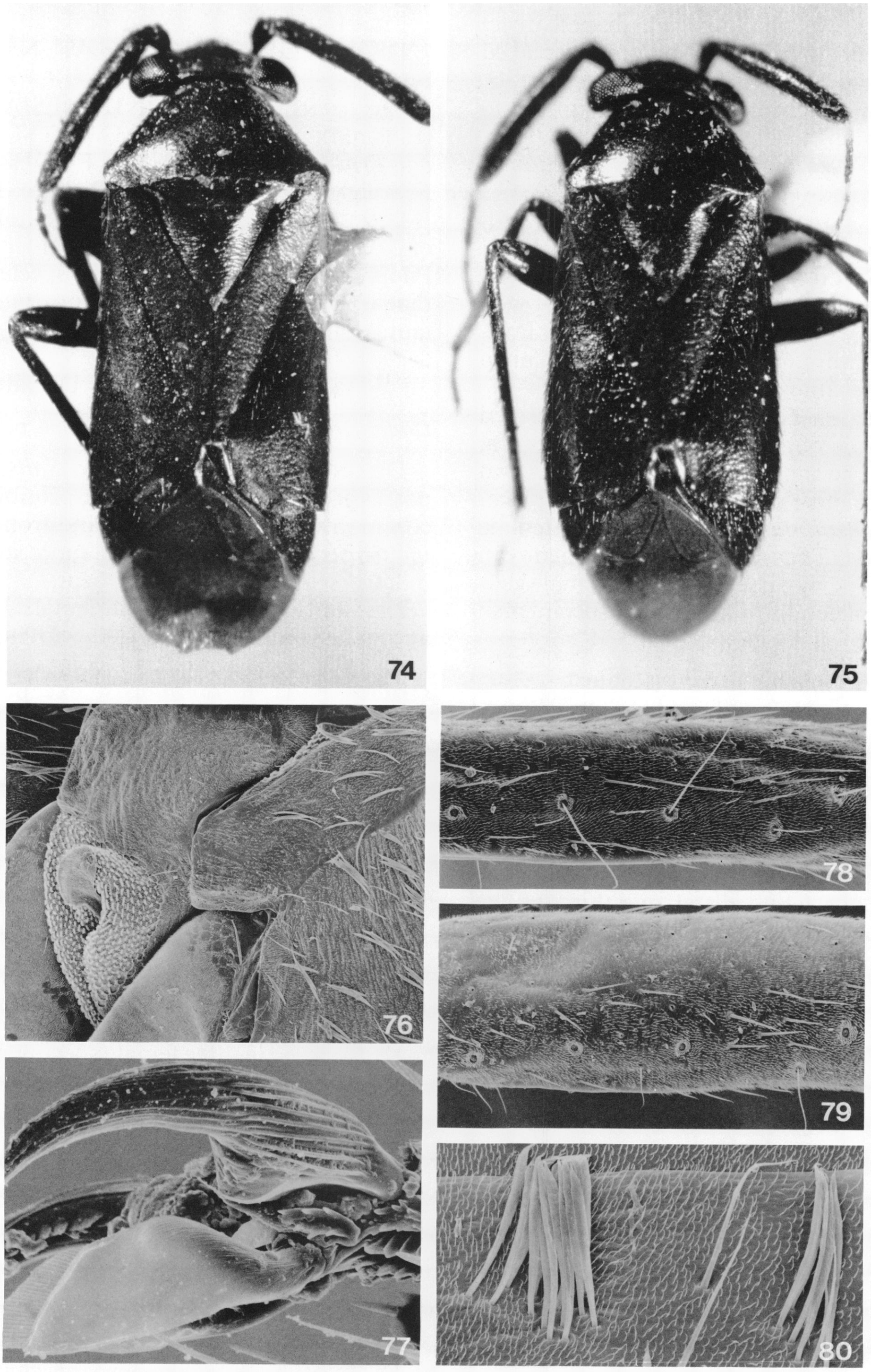
SPECIMEN EXAMINED: SRI LANKA: Peradeniya, 5-09 (BMNH), 1♀ (lectotype).

DISCUSSION: Distant (1909a) did not indicate how many specimens he examined in preparing the original description of *Druthmarus magnicornis.* W. R. Dolling informs me that there are three female specimens, one mutilated, in the British Museum (Natural History), all with the same data. I am designating one of these as the lectotype. It bears the labels: "Ceylon, Peradeniya, 5-09, *Druthmarus magnicornis* Dist., *type,* Lectotype *Druthmarus magnicornis* Distant, det R. T. Schuh."

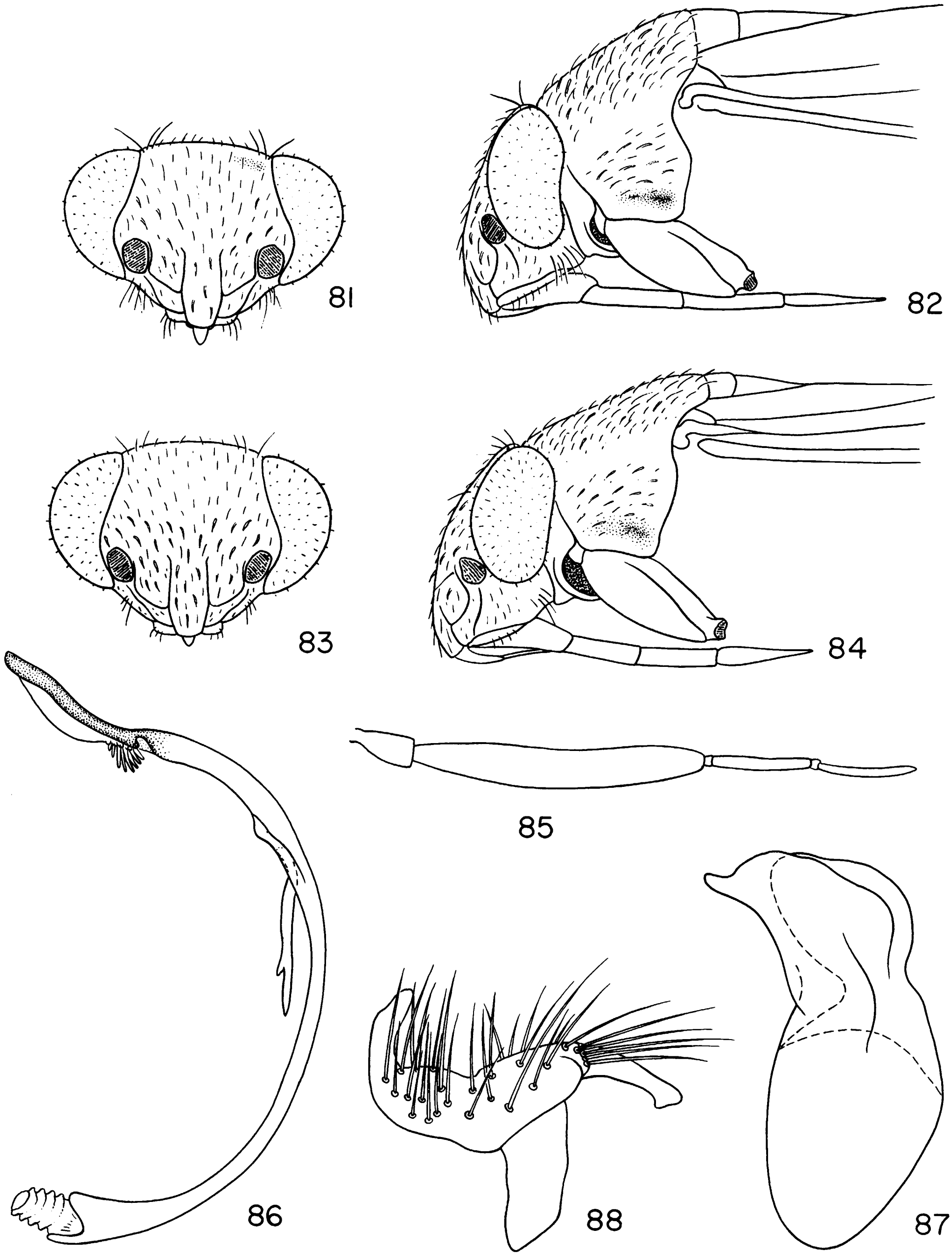
Druthmarus philippinensis, new species

Figures 73, 75–88

DIAGNOSIS: Recognized by the characters given in the generic diagnosis, the terete second antennal segment, the medium size, and the form of the male genitalia.

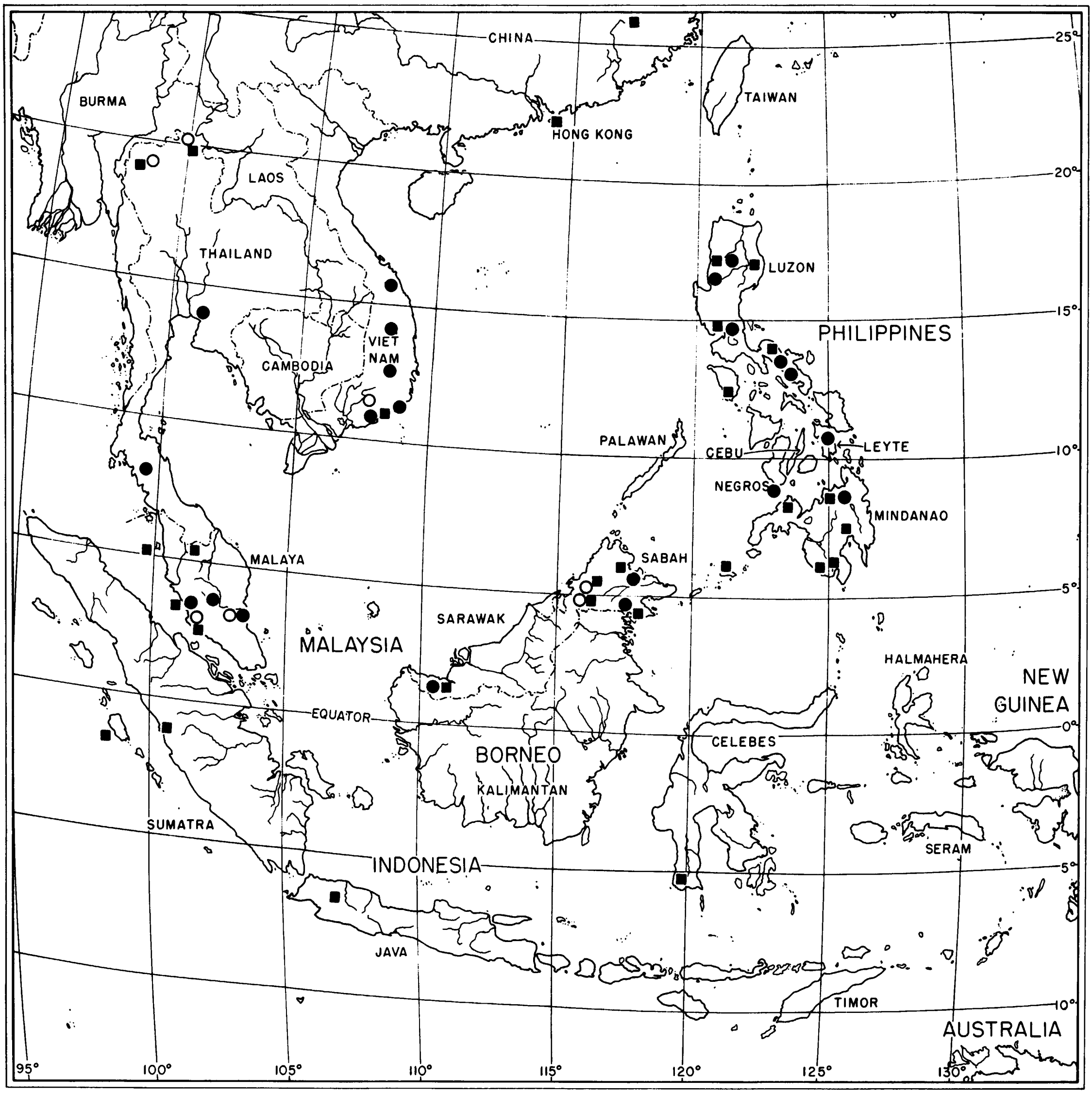


FIGS. 74–80. 74. *Druthmarus coxalis*, ♂, Malaysia, Sabah Prov., Tenompok. 75–80. *Druthmarus philippinensis*. 75. Dorsal view, holotype. 76. Lateral view of metathorax. 77. Pretarsus. 78. Mesofemur, showing trichobothria. 79. Metafemur, showing trichobothria. 80. Detail of setae on posterior margin of abdominal sternite 2.



FIGS. 81–88. *Druthmarus philippinensis.* 81. Frontal view of head, ♂. 82. Lateral view of head and prothorax, ♂. 83. Frontal view of head, ♀. 84. Lateral view of head and prothorax, ♀. 85. Antenna, ♂. 86. Vesica. 87. Phallotheca. 88. Left paramere.

DESCRIPTION: Macropterous male. Medium-sized, length apex tylus-cuneal fracture 2.18, width pronotum 0.98; black, proximal one-third of antennal segment one, procoxae, distal one-third of mesocoxae, and all tarsal segments one and two white; head below eyes, excluding clypeus and jugae, highly polished and shining; abdominal sternite two with patches of scalelike setae laterally on posterior margin.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NEGROS
MINDANAO
SABAH
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MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
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FIG. 89. Distribution of *Paramixia* spp. *P. pacificae* (○); *P. rufescens* (●); *P. singalensis* (■), also from Sri Lanka.

Posterior margin of vertex sharply carinate; eyes occupying about two-thirds of height of head; gula short; labium reaching posterior margin of mesosternum; corium broadened and lateral margins somewhat rounded posteriorly; meso- and meta-femoral trichobothria as in figures 78 and 79.

MALE GENITALIA: Figures 86–88.

FEMALE: As in generic description (figs. 83, 84).

FEMALE GENITALIA: Posterior wall with bulge characteristic of Pilophorini.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in the Philippine Islands.

DISTRIBUTION: Figure 73. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Rizal Prov., Mt. Montalban, Wa-Wa Dam, 150–200 m., March 6, 1965, H. M.

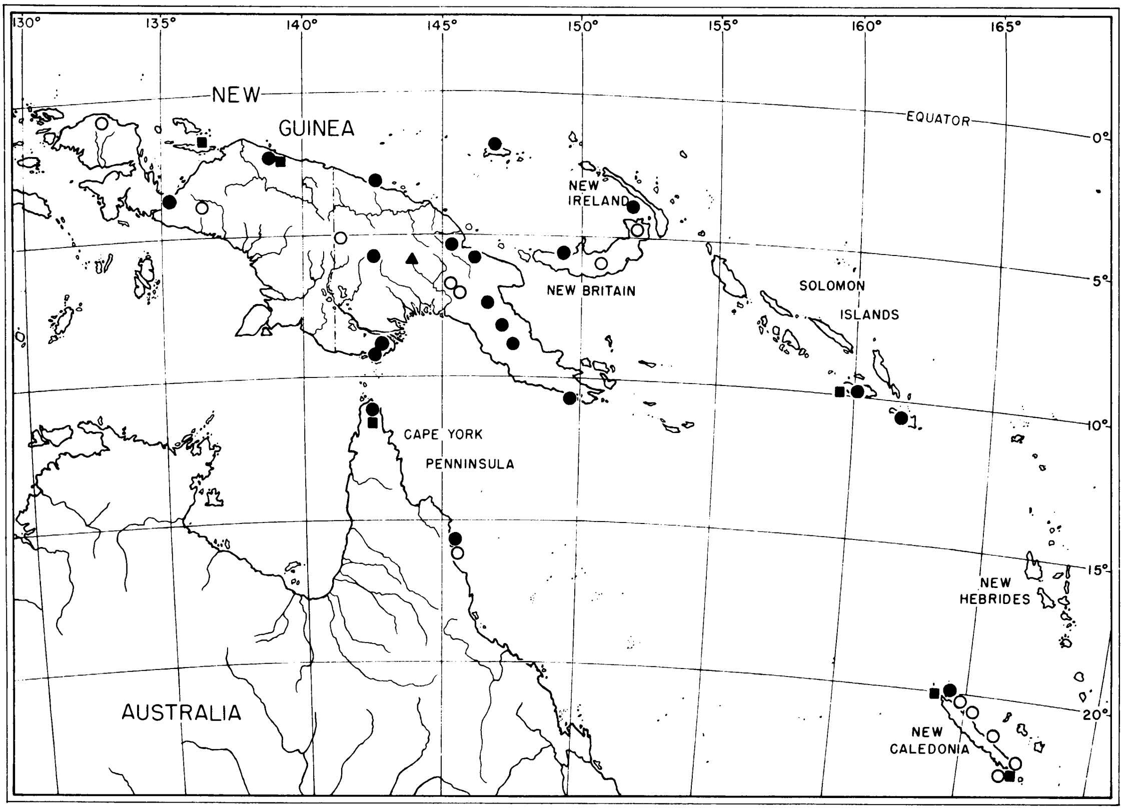


FIG. 90. Distribution of *Paramixia* spp. (continued). *P. pacificae* (○); *P. papuensis* (▲); *P. rufescens* (●); *P. singalensis* (■).

Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but February 25–March 29, 1965 (AMNH, Bishop), 62♂♂, 39♀♀.

ADDITIONAL SPECIMENS: Same data as paratypes (AMNH, Bishop), 198♂♂, 191♀♀.

PARAMIXIA REUTER

Paramixia Reuter, 1900, p. 264; Schuh, 1974, pp. 210–218.

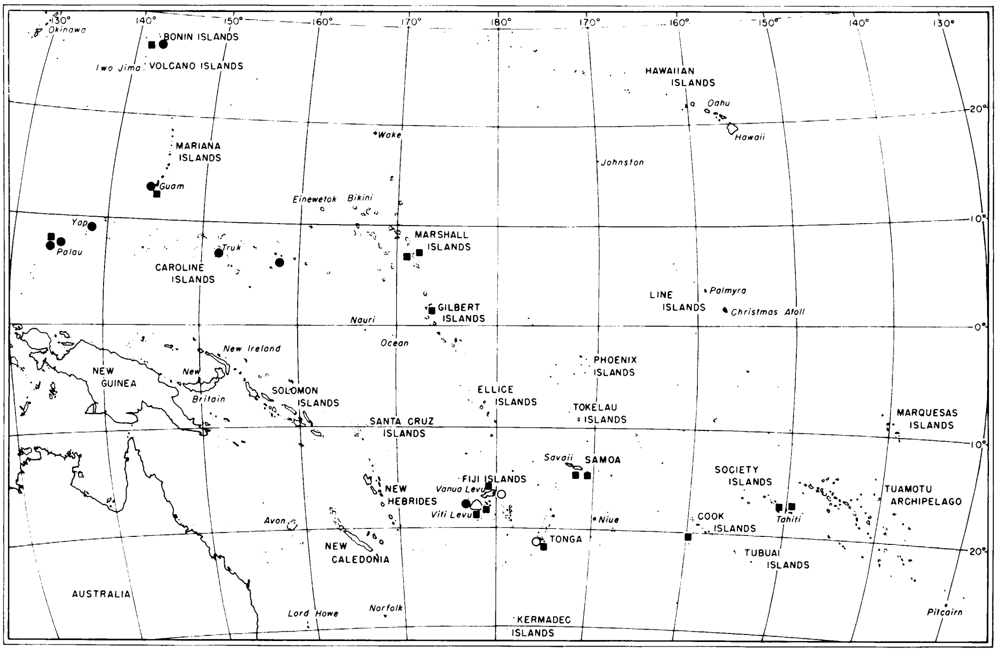
Cephalocapsidea Poppius, 1915, p. 71. NEW SYNONYMY.

DIAGNOSIS: *Paramixia* species can be recognized by the presence of lamellate apically convergent parempodia, scattered scalelike sericeous setae on the dorsum and thoracic pleuron, and the form of the male genitalia, in which the vesica is always a simple tubelike structure, the phallotheca is usually L-shaped, and the left paramere is not splayed out (see figures and discussion in Schuh, 1974, pp. 210–218).

DISTRIBUTION: Figures 89–91. Pantropical.

DISCUSSION: Specific identification of specimens of *Paramixia* is most easily and confidently made through dissection of the male genitalia. Most species are rather widely distributed and show little to extreme variation in pigmentation and coloration. Thus, external characteristics are difficult to use unless comparative material is available. The females of certain species appear to be impossible to separate unless they are associated with males.

In a previous paper (Schuh, 1974) I devoted considerable space to a discussion of the taxonomic problems encountered in *Paramixia*. That discussion remains basically valid except for the discovery that *Cephalocapsidea* Poppius is also a synonym of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BONIN ISLANDS
Iwo Jima
VOLCANO ISLANDS
HAWAIIAN ISLANDS
Oahu
Hawaii
MARIANA ISLANDS
Guam
Wake
Johnston
Eniwetok
Bikini
Yap
Palau
Truk
CAROLINE ISLANDS
MARSHALL ISLANDS
LINE ISLANDS
Palmyra
Christmas Atoll
GILBERT ISLANDS
Nauri
Ocean
New Ireland
NEW GUINEA
New Britain
SOLOMON ISLANDS
PHOENIX ISLANDS
ELLICE ISLANDS
TOKELAU ISLANDS
MARQUESAS ISLANDS
SANTA CRUZ ISLANDS
Savaii
SAMOA
SOCIETY ISLANDS
FIJI ISLANDS
Vanua Levu
Viti Levu
NEW HEBRIDES
TUAMOTU ARCHIPELAGO
COOK ISLANDS
Tahiti
Niue
TONGA
Avon
NEW CALEDONIA
TUBUAI ISLANDS
AUSTRALIA
Lord Howe
Norfolk
KERMADEC ISLANDS
Pitcairn
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140°
130°
20°
10°
0°
10°
20°

FIG. 91. Distribution of *Paramixia* spp. (continued) *P. pacificae* (○); *P. rufescens* (●); *P. singalensis* (■).

Paramixia, as determined by examination of type material of that genus (see discussion under *P. rufescens* and *P. singalensis*).

Onder (1973) transferred *Psallus mahensis* Distant from the Seychelles Islands to *Orthotyllelus* Knight. My (1974) synonymy of *Orthotyllelus* with *Paramixia* makes *mahensis* a member of the latter genus. Onder's (1973) illustration of the male genitalia indicates that generic placement is indeed correct.

A single male specimen from Bangkok, Thailand, deposited in the National Museum of Natural History, Washington, D.C., apparently represents an additional species of *Paramixia.* The general coloration is reddish; although the specimen is somewhat mutilated, the body form is apparently more stocky than in other recognized species; the vesica is L-shaped, acuminate apically, of nearly uniform thickness over its entire length, untwisted, and with an obscure secondary gonopore (something that is not visible in other known species); the left paramere is similar to that of *Paramixia papuensis.*

The male genital structures of *Paramixia* are very similar to those of *Rhinacloa forticornis,* and in fact Carvalho (1948) described *Paramixia carmelitana* as a species of *Rhinacloa*; Carvalho (1955b) noted that *Orthotylellus* (=*Paramixia*) and *Rhinacloa* were so similar in genitalic structure of the males and in general appearance that he neglected to look seriously at the pretarsal structures. *Rhinacloa* has scalelike setae which are superficially similar to those found in *Paramixia*; comparison of figures 96 and 1445 shows that not only are they more strongly flattened and appressed to the body as well as having a much more dense distribution, but also that those of *Rhinacloa* are striate (as in lepidopteran scales) and scalloped apically whereas those of *Paramixia* (and other Pilophorini) are smooth and lanceolate.

Although there are some striking similarities in the male genitalia and general appearance of some species of *Rhinacloa* and *Paramixia,* the pretarsal structures are markedly different. *Paramixia* has apically convergent lamellate parempodia and lacks pulvilli (Schuh, 1976, figs. 19, 20), whereas *Rhinacloa* has setiform parempodia and sometimes has large pulvilli covering nearly the entire ventral surface of the claws.

TABLE 1
Measurements (in Millimeters) of *Paramixia* Species

Taxon	Sex	Sample Size	Length Apex Tylus/ Cuneal Fracture	Range	Length Eye	Length Head Anterior To Eye	Ratio
singalensis	♂	N = 10	1.56	1.48–1.68	0.19	0.15	1.27
	♀	N = 10	1.63	1.50–1.78	0.18	0.16	1.13
rufescens	♂	N = 10	1.54	1.43–1.75	0.19	0.17	1.12
	♀	N = 10	1.72	1.63–1.85	0.19	0.17	1.12
papuensis	♂	N = 5	1.80	1.70–1.83	0.21	0.19	1.11
	♀	N = 4	1.98	1.85–2.05	0.23	0.23	1.00
pacificae	♂	N = 8	1.84	1.70–2.05	0.20	0.21	0.95
	♀	N = 6	1.86	1.73–1.95	0.19	0.18	1.06

Although there is little data on the host plants for the Oriental and Pacific species, *Paramixia* is obviously rather common in these areas, particularly *singalensis*, suggesting that the hosts are also common. Usinger (1946) listed several sedge hosts for species known from Guam, and specimens of *papuensis* recorded below have Juncaceae indicated as the host. Most known collections from Africa are from sedges and rushes (Schuh, 1974) and my experience in collecting *Paramixia* in the Neotropics suggests that the New World species may feed exclusively on species of Cyperaceae and Juncaceae.

I have not indicated which specimens were collected in light traps in the locality data given below, since this is by far the most common method of capture. For *singalensis* and *rufescens* I have not given specific dates of collection, collectors, or museums of deposition, since so many specimens are involved; the greatest share of this material for both species is from the Bishop Museum.

KEY TO THE INDO-PACIFIC SPECIES OF *PARAMIXIA*

1. In dorsal view head not projecting strongly in front of eye; ratio length of eye/length of head anterior to eye 1.27 ♂♂, 1.13 ♀♀, compared with 1.12 or less in males of other species and 1.12 or less in females (see table 1 and compare figures 104 and 111); length apex tylus-cuneal fracture 1.56 ♂♂ and 1.63 ♀♀; coloration brownish to nearly black; male genitalia as in figures 114–116; Sri Lanka to Tahiti .... *singalensis*

   Head projecting more or less conspicuously in front of eyes in dorsal view (see table 1); average length apex tylus-cuneal fracture of males greater than 1.54, of females 1.72; coloration variable; male genitalia distinctive for each species 2

2. Procoxae and femora white or cream colored, generally contrasting with meso- and metafemora and coxae which are usually reddish; male genitalia as in figures 107–109; distance apex tylus-cuneal fracture: 1.54 ♂♂, 1.72 ♀♀ .... *rufescens*

   All coxae and femora unicolorous, either deep red or tan, and of similar coloration to dorsum of insect; distance apex tylus-cuneal fracture 1.70 ♂♂, 2.05 ♀♀ 3

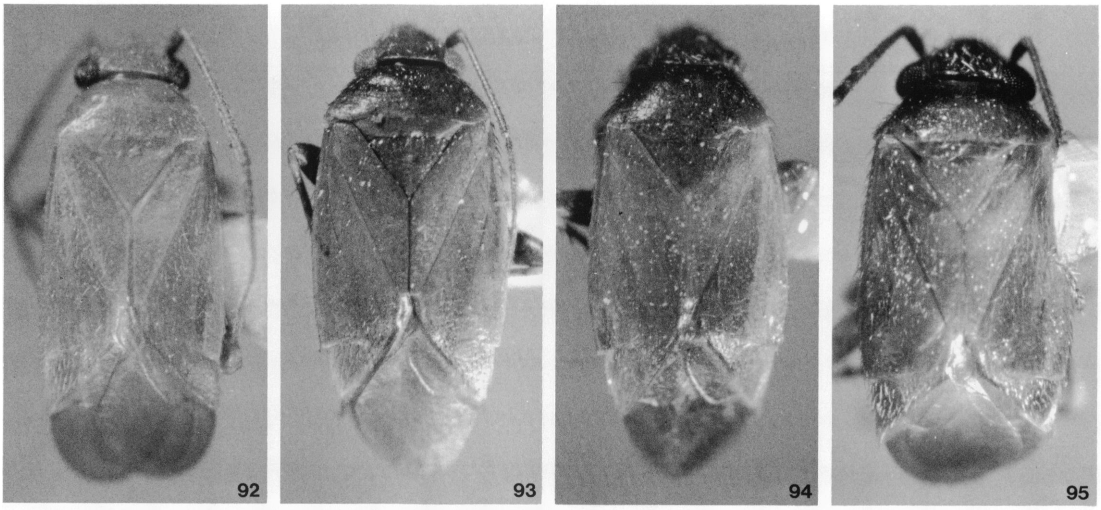
3. Male genitalia as in figures 97–99; left paramere "flattened," vesica with short apical attenuation, posterior arm of left paramere broad and attenuated apically; coloration deep red or tan; Southeast Asia to Tonga and Fiji .. .. *pacificae*, new species

   Male genitalia as in figures 100–102; left paramere not strongly flattened, posterior arm arched; coloration deep red; New Guinea . ... *papuensis*, new species

Paramixia pacificae, new species

Figures 89–91, 92, 97–99

Diagnosis: *Paramixia pacificae* resembles *P. papuensis* and *P. rufescens* in the shape of the head. It can be most easily recognized by the form of the male genitalia in which the left paramere is strongly flattened, the posterior process being rather strongly attenuated apically (fig. 99); the vesica is also strongly



FIGS. 92–95. *Paramixia* spp. 92. *P. pacificae.* 93. *P. papuensis.* 94. *P. rufescens.* 95. *P. singalensis.*

attenuated apically in contrast to *papuensis* (compare figs. 97 and 100). The procoxae are unicolorous with the remainder of the body in contrast to *rufescens.*

DESCRIPTION: Macropterous male. Relatively large, length apex tylus-cuneal fracture 1.84, width pronotum 0.85; general coloration either light orange brown or castaneous (as in *papuensis*); in the lighter colored orange-brown specimens second antennal segment infuscate on the distal one-third, antennal segments three and four dark brown; tarsal segment three nearly black; tibiae in lighter colored specimens yellowish, bases of tibial spines orange; tibiae in dark-colored specimens light, contrasting with femora; bases of tibial spines reddish.

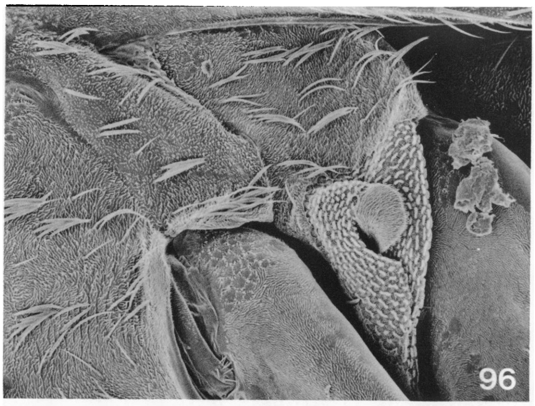


FIG. 96. *Paramixia singalensis,* lateral view of metathorax.

Dorsum, thoracic pleuron, and abdominal venter clothed with scalelike appressed sericeous pubescence; dorsum also with decumbent setae.

Head projecting anteriorly beyond anterior margin of eyes by distance nearly equal to length of eye measured longitudinally in lateral view (table 1); apex of labium reaching slightly beyond posterior margin of metatrochanters.

MALE GENITALIA: Figures 97–99 (see Discussion).

FEMALE: Macropterous. Similar to male.

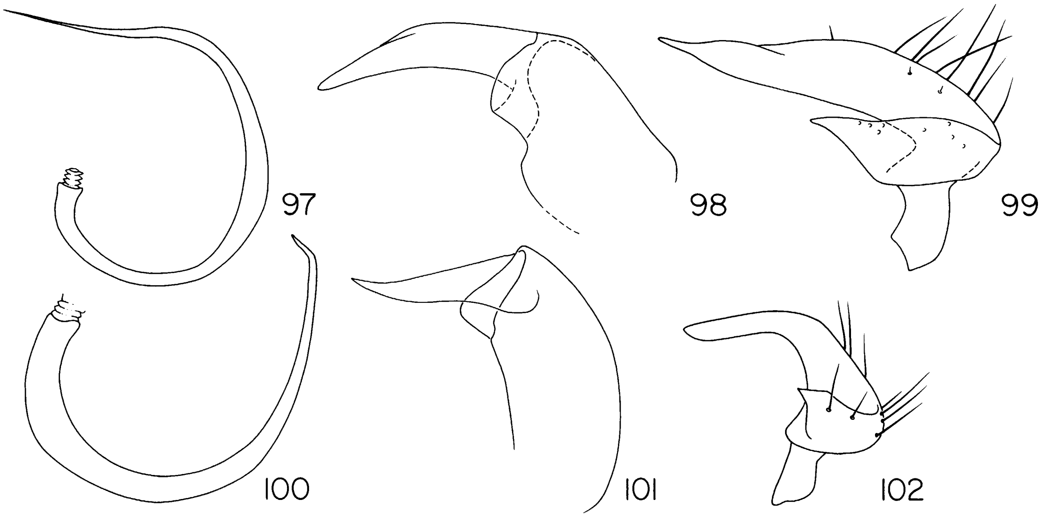
FEMALE GENITALIA: Posterior wall bulging.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in the Southwest Pacific.

DISTRIBUTION: Figures 89–91. Thailand, Indochina, Malaya, New Guinea, the Bismarck Archipelago, Northern Australia, New Caledonia, Tonga, and Fiji.

DISCUSSION: *Paramixia pacificae* has two distinct color forms, a dark reddish castaneous one and a lighter orange-brown one. The latter color variation is known principally from New Guinea, but at least one specimen is known from New Caledonia and another from New Britain. Superficially, the



FIGS. 97–102. 97–99. *Paramixia pacificae.* 97. Vesica. 98. Phallotheca. 99. Left paramere. 100–102. *Paramixia papuensis.* 100. Vesica. 101. Phallotheca. 102. Left paramere.

dark form resembles very closely *Paramixia papuensis* and the females of the two species are inseparable. However, the male genitalia are distinctive, those of *pacificae* closely resembling *Paramixia singalensis* in the form of the vesica, and *Paramixia suturalis* and *P. australis* Schuh from Africa in the form of the left paramere. I have identified a number of available female specimens only as *Paramixia* sp., because without the male genitalia no characteristics appear to be available to separate these two species in those areas where they occur sympatrically.

HOLOTYPE ♂: NEW CALEDONIA: Canala, November 11, 1958, C. R. Joyce collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: AUSTRALIA: *Queensland:* Lucinda Point, July 1904 (Bishop), 1♂, 1♀; Cairns, Yorkey's Knob, April 27, 1957, salt marsh (Wirth; USNM), 1♂; Iron Range, June 24–26, 1948 (Tate; AMNH), 2♀♀.

FIJI: Taveuni, Waiyevo, 0–100 m., January 1972 (Krauss; Bishop), 1♂; Ndeumba, January 1955 (Krauss, Bishop), 1♂, 1♀; Raki Raki, 0–100 m., February 1971 (Krauss, Bishop), 1♂.

INDONESIA: *West Irian:* Vogelkop, Sacrameba, Village W of Lake Anggi Giji, 1850 m., August 1, 1957 (Hardy; Bishop), 1♂; Enarotadi, Wisselmeren, 2000 m., August 5, 1955 (Gressitt; Bishop), 1♂.

MALAYSIA: *Malaya:* Kuala Lumpur, 19 km. S Subang, December 23, 1958 (Maa; Bishop), 1♂; Pahang, Kuala Tahan, December 15–16, 1958, nipa swamp (Maa; Bishop), 1♀. *Sabah:* Interior Residency, Sensuron, January 9–11, 1959 (Maa; Bishop), 1♀; Interior Residency, Tenompok, February 10–19, 1959 (Maa; Bishop), 1♀; West Coast Residency, Ranau, 500 m., September 28–October 7, 1958 (Maa; Bishop), 1♂, 1♀.

NEW CALEDONIA: Same data as holotype, 1♂, 5♀♀; Anse Vata, November 1, 1958 (Joyce; AMNH, Bishop), 5♂♂, 12♀♀; Dumbea River, October 28, 1958 (Joyce; Bishop), 3♀♀; Nassirah, November 11, 1958 (Joyce; Bishop), 1♂, 6♀♀; Noumea, May 1950 (Krauss; Bishop), 5♂♂; Noumea, February 1959 (Krauss; Bishop), 2♂♂, 4♀♀; Noumea, November 22–23, 1964 (Straatman; Bishop), 6♂♂, 12♀♀; Plateau de Dogny, 1000 m., April 9–11, 1973 (Gressitt; Bishop), 2♀♀; Pondimie, November 26, 1958 (Joyce; Bishop), 2♂♂, 2♀♀; Pouebo, NE Coast, 20 m., of January 14, 1964 (Straatman; Bishop), 2♀♀; Riviera Lueue, Yate, 35 km. SE Noumea, 160–180 m., November 14, 1963 (Straatman; Bishop), 1♀; on heights between Thio and Nakety, November 12, 1958 (Joyce; Bishop), 1♀.

PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Goroka, 1550 m., June 26, 1955 (Gressitt; Bishop), 1♀. *New Britain Prov.:* New Britain, Yalom, 1000 m., May 17, 1962 (Copenhagen), 1 ♂. *West Sepik Prov.:* Tifalmin, 1400 m., August 21, 1963, light trap (Straatman; Bishop), 1♂.

THAILAND: *Chiangmai Prov.:* Fang, April 12–19, 1958 (Maa; AMNH, Bishop), 27♂♂, 127♀♀; Fang, 500 m., April 12–19, 1958 (Maa; Bishop), 5♀♀; Fang, Agricultural Experiment Station, 600 m., June 14, 1965 (Morimoto; Bishop), 2♀♀; Chiangdao, April 5–11, 1958 (Maa; Bishop), 1♂, 1♀; Banna, May 5–10, 1958 (Maa; AMNH, Bishop), 20♀♀.

TONGA ISLANDS: Tongatapu, Nukualofa, 0–100 m., October 1969 (Krauss; Bishop), 1♂, 2♀♀.

VIET NAM: Bien Hoa, February 25, 1969, at light (Joyce; Bishop), 2♀♀; Bien Hoa, November 10, 1969, at light (Joyce; Bishop), 1♀; Long Binh Post, October 14, 1969, sweeping grassy area (Joyce; Bishop), 1♂, 7♀♀.

Additional Specimens: INDONESIA: *West Irian:* Vogelkop, Sururai, village area, W shore of Lake Anggi Giji, 1850 m., July 25, 1957 (Hardy; Bishop), 5♀♀; Enarotadi, Wisselmeren, 1800 m., August 5, 1955, light trap (Gressitt; Bishop), 1♀. NEW CALEDONIA: Pouebo, NE coast, 10 m., January 11, 1964, light trap (Straatman; Bishop), 1♀. PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Kainantu, 1650 m., October 20–26, 1959, MV light trap (Maa; Bishop), 1♀; Moife, 15 km. NW Okapa, 2100 m., October 1–13, 1959 (Maa; Bishop), 1♀. *East New Britain Prov.:* Vunabaken, 10 km. E of Keravat, 180 m., November 16–20, 1959 (Maa; Bishop), 5♀♀. *West Sepik Prov.:* Tifalmin, 1400 m., August 21, 1963, light trap (Straatman; Bishop), 5♀♀. [*Province unknown*]: Eliptamin Valley, 1200–1350 m., June 19–30, 1959 (Brandt; Bishop), 1♀; Miriamar, Asaro, 1800 m., June 27, 1955 (Gressitt; Bishop), 1♀.

Paramixia papuensis, new species

Figures 90, 93, 100–102

Diagnosis: Most closely resembles *Paramixia pacificae,* but can be easily separated from it by the structure of the male genitalia (figs. 100–102); separated from other known sympatric species by the characters given in the key.

Male: Macropterous. Relatively large, length apex tylus-cuneal fracture 1.80, width pronotum 0.87; basic coloration castaneous to lighter reddish brown; tibiae somewhat lighter than general coloration of body and legs, bases of spines castaneous; tarsal segments nearly black.

Dorsum very weakly rugulose, smooth, dull; dorsum, most of thoracic pleuron, and abdomen with scalelike, appressed, sericeous pubescence; dorsum also with short decumbent dark setae; anterolateral angles of pronotum with an erect fine spine.

Head elongate, extending anteriorly a distance nearly equal to the length of the eye measured longitudinally in a lateral view (table 1); apex of labium just surpassing metatrochanters.

Male Genitalia: Figures 100–102.

Female: Macropterous. Similar to male.

Female Genitalia: Posterior wall bulging.

Measurements: See Appendix.

Etymology: Named for its occurrence in New Guinea.

Distribution: Figure 90. Papua New Guinea.

Holotype ♂: PAPUA NEW GUINEA: *Southern Highlands Prov.:* Dimifa, SE of Mt. Giluwe, 2200 m., October 11, 1958, ex Juncaceae, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype, 7♂♂, 6♀♀ (AMNH, Bishop).

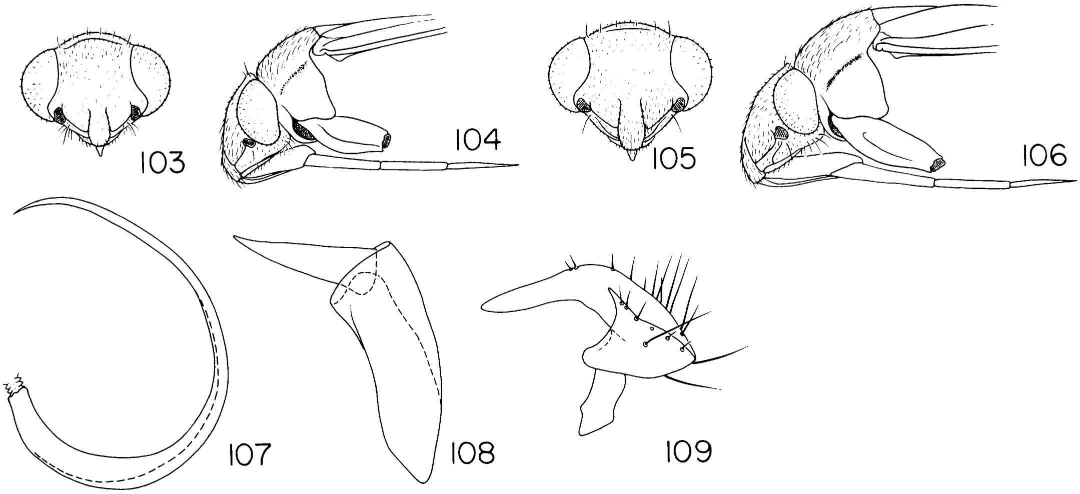
Discussion: See *Paramixia pacificae.*

Paramixia rufescens (Poppius), new combination

Figures 89–91, 94, 103–109

Cephalocapsidea rufescens Poppius, 1915, p. 71.
Orthotylellus samoanus Knight, 1935, p. 207. NEW SYNONYMY.
Orthotylellus rufescens Usinger, 1946, p. 79. NEW SYNONYMY.
Orthotylellus pallescens Usinger, 1946, p. 80. NEW SYNONYMY.

Diagnosis: Generally recognizable by the reddish coloration contrasting with the whitish procoxae and profemora. Male genitalia also diagnostic, the vesica being distinctly



FIGS. 103–109. *Paramixia rufescens*. 103. Frontal view of head, ♂. 104. Lateral view of head and prothorax, ♂. 105. Frontal view of head, ♀. 106. Lateral view of head and prothorax, ♀. 107. Vesica. 108. Phallotheca. 109. Left paramere.

C-shaped with a conspicuous subapical bend (fig. 107) and the left paramere with a distinctly angulate posterior process (fig. 109). In very light specimens, such as those described as *pallescens* by Usinger (1946), examination of the male genitalia may be necessary for positive identification.

MALE GENITALIA: Figures 107–109.

FEMALE: See generic discussion.

FEMALE GENITALIA: See generic discussion.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figures 89–91. Broadly sympatric with *P. singalensis*. Known from as far west as Sri Lanka and east to Samoa, north to Indochina and south to Northern Australia.

DISCUSSION: Poppius (1915) based his original description of *rufescens* on two specimens, a male and a female. I am designating the male specimen, deposited in the Helsinki Museum, as the lectotype; it bears the labels: "Fuhosho, Formosa, H. Sauter; *Cephalocapsidea rufescens* n. gen. et sp.: Lectotype *Cephalocapsidea rufescens* Poppius det R. T. Schuh; Mus. Zool. H: fors., Spec. typ. No. 10162, *Cephalocapsidea rufescens* Popp." The female specimen examined by Poppius and with the same locality data is deposited in the Institut fur Planzenschutzforschung Kleinmachnow (Eberswalde), the former Deutsches Entomologisches Institut.

Comparison of the type material of *rufescens* (Poppius), *samoanus* (Knight), *rufescens* (Usinger), and *pallescens* (Usinger) indicates they are synonyms, with *rufescens* (Poppius) having priority. Although there is considerable variation in the intensity of the reddish coloration of the body and meso- and metalegs, it shows no apparent geographic pattern; however, the form of the male genitalia is extremely constant over the entire range of the species.

SPECIMENS EXAMINED: AUSTRALIA: *Queensland:* Cairns, August 1904, 1♀; Lucinda Point, July 1904, 1♀; North Cape York, Bamaga, January 1958, 1♀.

BONIN ISLANDS: *Chichi Jima:* Omura, "camp beach," May–June 1958, 1♂.

CAROLINE ISLANDS: *Palau Group:* Arakabensan Island, July 1946, 1♂. *Babelthuap Island:* Airai, Ngerimal River, May 1957, 4♂♂, 2♀♀; E of Ngatpang, 65 m., December 1952, 3♂♂, 4♀♀; Ngaremskang, 25 m., December 1952, 6♂♂, 19♀♀; Ngiwal, 1 m., December 1952, 1♂; Ngerehelong, December 1947, 1♂; Ngiwal, May 1957, jungle, 1♂; Ulimang, December 1947, 1♂, 3♀♀; no data, July 1946, 1♂. *Koror Island:* November 1947, 1♀; April 1953, 1♀; July 1946, 1♂. *Ponape Island:* Airfield No. 2, June–September 1950, 4♂♂, 2♀♀; Mt. Dolennankap, 1700–2000 feet, August 1946, 1♀. *Truk Atoll:* Fefan Island, Mt. Iron, 180 m., January 1959, 1♀; Moen Island, 600 feet, July 1946, 1♀. *Yap Atoll:* Yap Island, Mt. Matade, 95 m., December 1952, 2♂♂, 3♀♀; Yap Island, hill behind Yaptown, 50 m., December 1952, 1♂, 2♀♀; Central Yap Island, July–August 1950, 1♀; Yaptown, July 1946, 1♀.

FIJI: *Viti Levu:* Lami, November, January, February, April, 5♀♀; Naquali, November 1957, 3♀♀.

INDONESIA: *West Irian:* Nabire, S of Geelvink Bay, 1–20 m., July 1962, 1♀; Hollandia, March 1960, 1♂; Hol Maffen, 22 km. E of Sarmi, July 1959, 1♀.

MALAYSIA: *Malaya:* Pahang, Cameron Highlands, Mt. Brichang, January 1959, 1♀; Pahang, Kuala Tahan, December 1958, 2♀♀; Selangor, near Kuala Lumpur, September 1958, 1♂, 1♀; Selangor, Kuala Lumpur near L. Gardens, September 1934, 1♀. *Sabah Prov.:* Interior Residency, Tenompok, February 1959, 1♀; Sandakan Residency, Sandakan Bay (NW), Sepilok Forest Reserve, 1–10 m., October 1957, 1♀; Sandakan Residency, Sandakan Bay (SW), Sapagaya Lumber Camp, 2–20 m., November 1957, 1♀; Tawau Residency, forest camp, 19 km. N of Kalabakan, November 1962, 1♂, 5♀♀. *Sarawak:* Bau District, Bau, 90–240 m., August 1958, 2♀♀; Bau, Lake Area, August 1958, 1♂, 1♀; Bidi, 90–240 m., September 1958, 6♂♂, 3♀♀; Gunong, Matang, 120 m., September 1958, 1♀; Kuching, Santubong, June 1958, 1♂; Nanga Pelagus, August 1958, 1♀; Nanga Pelagus near Kapit, 180–585 m., August 1958; Pangkalan Tebang, 300–450 m., September 1958, 4♂♂, 4♀♀; Pueh Lundu District, Kampong, 690–1500 m., June 1958, 1♂; Sadong, Kampong Tapuh, 300–450 m., July 1958, 1♂; Sarikei District, Rejang Delta, July 1958, 1♂; no data, June–September 1958, 4♂♂, 4♀♀.

MARIANA ISLANDS: *Guam:* Agana Spring, May 1936, 1♂, 1♀; Inarajan, June 1936, 3♀♀; Mt. Chachao, May 1936, 4♂♂, 3♀♀; Mt. Lamlam, February 1958, 1♀; Mt. Alifan, April 1946, 1♂.

NEW CALEDONIA: Pouebo, 10–100 m., January 1964, 1♂, 7♀♀; St. Louis, March 1959, 1♀.

PAPUA NEW GUINEA: *Central Prov.:* Mamai Plantation, E of Port Glasgow, 150 m., February 1965, 1♀. *East New Britain Prov.:* New Britain, Keravat, 1–100 m., October 1968, 1♂. *East Sepik Prov.:* Ambunti, Sepik River, 200 m., May 1963, 2♀♀; Maprik, October 1957, 2♀♀. *Madang Prov.:* Finisterre Range, Saidor, Sibog Village, May–June 1958, 1♀. *Manus Prov.:* Admiralty Islands, Manus Island, Rossum, 6 km. SE Lorengau, 180 m., December 1959, 3♂♂, 1♀. *Morobe Prov.:* Wau, 1200 m., December 1964, 1♀; SW slope of Mt. Missim near Bulolo Gorge, 1100 m., September 1971, sedge, 2♂♂, 4♀♀. *Northern Prov.:* Kokoda, 400 m., November 1965, 1♀. *Western Prov.:* Oriomo River, 6 m., February 1964, 1♀. *Western Highlands Prov.:* Wum, Upper Jimmi Valley, 840 m., July 1956, 1♂. *West New Britain Prov.:* Baronga Island, near Lindenhafen, April 1956, 1♀. Oriomo Government Station, October 1960, 1♀.

PHILIPPINE ISLANDS: *Leyte:* Makaplag, July 1964, 1♀. *Luzon:* Albay Prov., Libon, Caguscos, 200 m., May 1965, 1♀; Camarines Sur, Mt. Isarog, Pili, 800 m., April 1965, 1♀; Mountain Prov., Ifugao, Mayoyao, 1000–1500 m., June–September 1966, 1♂, 5♀♀; Moutain Prov., Ifugao, Jacmal Bunhian, 24 km. E Mayoyao, 800–1000 m., April 1967, 1♀; Rizal Prov., WaWa Dam, Mt. Montalban, 150 m., March 1965, 5♀♀; Baguio, Bonquet, 1♀; Mt. Makiling, 2♀♀. *Mindanao:* Agusan, Los Arcos, November 1959, 1♀; Duruan District, Sapamoro, December 1961, 1♀; Bukidnon, Mt. Katanglad, 1250 m., December 1959, 1♂. *Negros Island:* Dumaguete, Camp Lookout, 1600 feet, April 1961, 2♀♀.

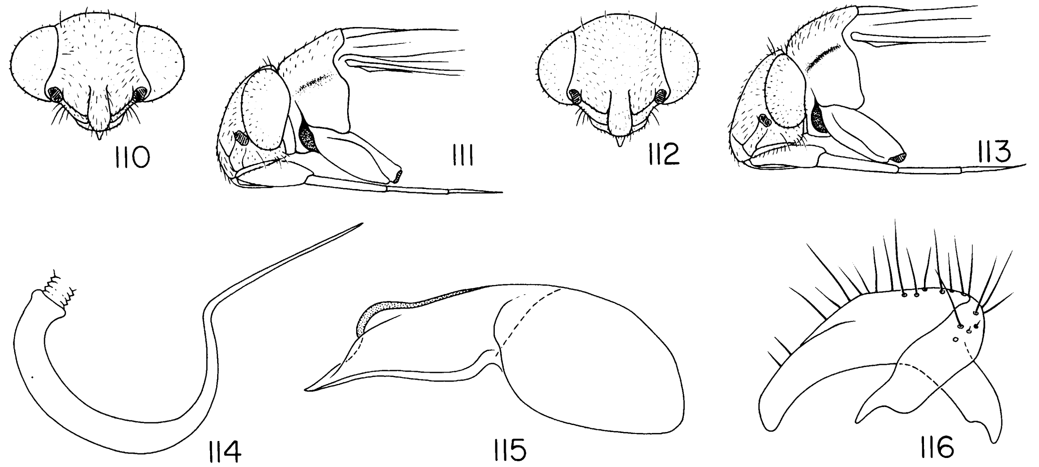
SAMOA: *American Samoa:* Manua Island, Tau, September 1923, 1♂; Tutuila, Pago Pago, October 1923, 1♂; Afono Trail, April 1935, 1♀. *Western Samoa:* Upolu Island, Falefa Falls, June 1940, 4♂♂.

SOLOMON ISLANDS: *Guadalcanal:* Roroni, 35 km. E of Honiara, 10 m., May 1964, 4♀♀. *San Cristobal:* Kira Kira, July 1960, 1♀.

SRI LANKA: *Sabarangamuwa Prov.:* Deerwood, Kuruwith, 6 mi. NNW of Ratnapura, February 1962, swept on cultivated grass and scrubland, 1♀.

THAILAND: Banna, May 1958, 1♀; Nakhon Nayok Prov., Khao Yai National Park, June 1965, 2♀♀; Trang Prov., Khaophappha Khaochang, 200–400 m., January 1964, 2♀♀.

VIET NAM: Ap Jung-Lam, 21 km. NW DiLinh, 1100 m., September–October 1960, 1♂, 1♀; Balo (Balao), 600 m., October 1960, 2♀♀; Bien Hoa, February 1969, 1♀; Dalat, 1500



FIGS. 110–116. *Paramixia singalensis.* 110. Frontal view of head, ♂. 111. Lateral view of head and prothorax, ♂. 112. Frontal view of head, ♀. 113. Lateral view of head and prothorax, ♀. 114. Vesica. 115. Phallotheca. 116. Left paramere.

m., September 1960, 1♂; 40 km. N of DiLinh (Djiring), 540 m., April 1960, 1♀; DiLinh (Djiring), 1200 m., April 1960, 1♂, 3♀♀; Fyan, 900–1000 m., July–August 1961, 2♀♀; Fyan, 76 km. SW of Ban Me Thout, 870 m., 1♂, 1♀; Kontum, N of Pleiku, 550 m., May 1960, 1♀; 25 km. SW of Pleiku, 400 m., May 1960, 1♀.

Paramixia singalensis Distant, new combination

Figures 89–91, 95, 96, 110–116

Psallus singalensis Distant, 1904, p. 482.
Cephalocapsidea obscurata Poppius, 1915, p. 72. NEW SYNONYMY.
Orthotylellus samoanus var. *nigrellus* Knight, 1935, p. 207. NEW SYNONYMY.
Orthotylellus brunnescens Usinger, 1946, p. 81. NEW SYNONYMY.
Orthotylellus singalensis: Onder, 1973, p. 3.

DIAGNOSIS: This species can be separated from its Indo-Pacific congeners by the head which does not project strongly beyond the anterior margin of the eyes (figs. 110, 112), its relatively small size (mean length apex tylus-cuneal fracture 1.56) and the form of the male genitalia (figs. 114–116). It is most similar in general appearance to the *carmelitana* group of species from the New World tropics.

MALE GENITALIA: Figures 114–116.

FEMALE: See generic discussion. Similar to male.

FEMALE GENITALIA: Posterior wall bulging.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figures 89–91. Broadly sympatric with *rufescens*; India east to Samoa and the Cook Islands, north to Formosa and south to northern Queensland.

DISCUSSION: This is probably the most commonly collected phyline in the western Pacific and the Indo-Malayan region. It is obviously not one of the most easily identified, however, as is evidenced by the number of synonyms. *Paramixia singalensis* is usually dark brown to nearly black, but some populations are lighter brown with the pronotal calli being dark and contrasting with the remainder of the dorsum. The first antennal segment is totally dark; the second segment is usually infuscate at the extreme base and on the distal one-fifth, and lighter mesially.

Distant (1904) described *singalensis* in *Psallus* Fieber, but not on the basis of characters that would unequivocally place it in that genus. Onder (1973) transferred *singalensis* to *Orthotylellus* Knight on the basis of pretarsal, head, and tibial characters; he designated a female specimen in the British Museum (Natural History) as the lectotype. Schuh (1974) synonymized *Orthotylellus* with *Paramixia*; therefore, *singalensis* becomes a species of *Paramixia,* even though I was not aware of Onder's work. Comparison of the lectotype of *singalensis* with type material and a large number of additional specimens indicates that *Cephalocapsidea obscurata* Poppius, *Orthotylellus samoanus* var. *nigrellus* Knight, and *Orthotylellus brunnescens* Usinger are synonymous with *singalensis.*

I have examined specimens from both the Helsinki and Hungarian Museums which were labelled by Poppius as *Cephalocapsidea obscurata.* The specimen from Budapest is a female and bears the following labels which agree with the data published by Poppius (1915) with his original description: "Formosa, Sauter; Takao, 1907; *Cephalocapsidea obscurata* n. sp.; typus." Since Poppius indicated that he had seen only a single female specimen and that it was deposited in Budapest, the Budapest specimen must be considered the holotype. The holotype of *Orthotylellus samoanus* var. *nigrellus* Knight from Samoa and the holotype and paratypes of *Orthotylellus brunnescens* (Usinger) from Guam are all deposited in the B. P. Bishop Museum.

Specimens Examined: AUSTRALIA: *Queensland:* Cape York Peninsula: Bamaga, January 1958, gum forest, 1♀; Lockerbie, 10 mi. WSW Somerset, April 1948, 1♀; Portland Roads, Aylen Hills, May 1948, 1♂.

BONIN ISLANDS: Chichi Jima, Okumura, "Yankee Town," May–June 1958, 1♀.

CAROLINE ISLANDS: *Palau Group:* Babelthaup Island, E of Ngatpang, March 1952, 2♀♀. *Ponape:* Colonia, February 1948, 1♂; Colonia, June–September 1950, 1♀; Colonia, January 1953, 1♂, 1♀; Mt. Kubersoh, 1900 feet, June–September 1950, 3♂♂, 4♀♀; Peipalap Park, June–September 1950, 1♂; Tolotom, 666 feet, June–September 1950, 1♂.

CHINA: *Fukien:* Chungan, Bohea Hills, November 1939, 1♂.

COOK ISLANDS: Raratonga, Totokoitu, Research Station, October 1975, 1♀.

FIJI: *Vanua Levu:* Savusavu, 1–100 m., March 1973, 1♂, 3♀♀; Lambasa, 1–100 m., January 1972, 1♂. *Viti Levu:* Tholo-i-suva, January 1951, 2♀♀; Vunindawa, May 1941, 1♀; Suva, February 1952, 1♀; Suva, February 1905, 1♀. *Nadi:* July 1967, 1♂. *Ovalau:* October 1924, 1♀; Lami, 1920, 1♀.

GILBERT ISLANDS: *Butaritari Atoll:* December 1957, 6♂♂, 8♀♀. *Marakei Atoll:* December 1957, 1♂. *Tarawa Atoll:* Banraeaba, December 1957, 1♂, 1♀; Bairini Island, November 1957, 1♂, 3♀♀; Betio Island, November 1957, 1♂, 1♀; Bienibeu, 0–5 m., January 1970, 19♂♂, 20♀♀; Eret, December 1957, 4♂♂; Marenanuka, December 1957, 1♂, 1♀; Teaoraereka, December 1957, 2♂♂, 6♀♀; Taborio, November 1957, 1♀.

HONG KONG: Castle Peak, August 1964, 3♂♂, 7♀♀; Sai Kung Station, October–November 1964, 9♀♀.

INDIA: *Assam:* Chabua: December 1943, 1♀; Doom Dooma, 13 mi. NE, December 1943, 1♀; Rupsi, November 1943, 1♂; Calcutta, September 1909, 1♀. *South India:* 1♀.

INDONESIA: *Java:* Bogor, December 1965, 5♂♂. *Mentawi Islands:* Siberut Island, September 1924, 3♂♂, 4♀♀. *Sulawesi:* Kakas, July 1937, 1♂. *Sumatra:* Dolok Merangir, September 1970, 1♂; Fort de Kock, 920 m., 1925, 1♀. *West Irian:* Hol Maffen, 22 km. E of Sarmi, July 1959, 1♂; Japen Island, Sumberbaba, Dawai River, October 1962, 3♂♂, 2♀♀.

MALAYSIA: *Malaya:* Negri Sembilan, Port Dickson, December 1935, 1♀; Penang, January 1959, 1♂; Perak, Taiping, January 1939, 1♀; Selangor, Klang, nipa swamp, December 1958; 1♀; Selangor, Kuala Lumpur, 19 km. S of Subang, December 1958, 1♀; Selangor, Kuala Lumpur, March 1927, 4♂♂; Selangor, February 1924, 1♀. *Sabah:* Interior Residency, Sensuron, January 1959, 1♂, 1♀; Sandakan Residency, Bettotan near Sandakan, August 1974, 1♀; Sandakan Residency, Upper Kinabtanagan River, March 1950, 1♀; West Coast Residency, Ranau, 500 m., September–October 1958, 1♀; Tawau Residency, Forest Camp, 19 km. N of Kalabakan, November 1962, 1♂; Tawau Residency, Tawau, Quoin Hill, Cocoa Research Station, September 1962, 1♀. *Sarawak:* Paya Palab, sweeping padi, January 1965, 1♀.

MARIANA ISLANDS: *Guam:* no data, 1♂, 1♀; February 1958, 10♂♂, 13♀♀; Apra Heights, January–February 1959, 1♀; Piti, June 1936, 1♂, 1♀; Pt. Oca, June 1945, 1♀.

MARSHALL ISLANDS: *Arno Atoll:* Ine Island, June–August 1950, 41♂♂, 30♀♀; Majuro, June 1950, 2♀♀. *Jaluit Atoll:* Elizabeth Island, November 1964, 1♀. *Namorik Atoll:* September 1953, 1♂, 3♀♀.

NEW CALEDONIA: Pouebo, 20 m., January 1964, 1♀; Yahoue, January 1963, 1♂, 1♀.

PHILIPPINE ISLANDS: Bacoor, 1♂, 2♀♀. Jolo Island, Jolo, September 1958, 1♀. *Leyte:* Abuyog, 35 mi. S Tacloban, July 1961, 6♂♂, 8♀♀; Tacloban, May 1945, 1♂, 1♀. *Luzon:* Camarines Sur, Mt. Isarog, Pili, 800 m., April 1965, 4♂♂; Isabela Prov., San Mariano, April–May 1961, 5♂♂; Mountain Prov., Abatan, Buguias, 60 km. S Bontoc, 1800–2000 m., May 1964, 1♂; Mountain Prov., 1♀; Ifugao, Mayoyao, 1000–1500 m., July–September 1966, 11♂♂, 6♀♀; Mt. Maquiling, 1♀; Bulocan, Tung-Kong Manga near Tola, September 1961, 1♂; Manila, September 1926, 1♀; Manila, December 1945, 1♀; Montalban, July 1936, 2♂♂, 1♀. *Mindanao:* Cotobato Prov., General Santos, August 1958, 1♂, 4♀♀; Milbuk, August 1958, 1♀; Davao Prov., Lawa, June, 11♂♂, 22♀♀; Zamboanga del Norte, Manucan, October 1969, 2♀♀; Agusan, Esperanza, Butuan City, November 1959, 1♂; Gingoog, May 1961, 1♀. *Mindoro:* San Jose, October 1945, 3♂♂, 2♀♀. *Negros Island:* Dumaguete City, September 1959, 2♀♀.

SAMOA: *American Samoa:* Tutuila: Fagatogo, August 1963, 1♂; Pago Pago, February 1930, 1♂; no data, May–September 1957, 2♀♀. *Western Samoa:* Upolu, Apia, April 1940, 1♀.

SOCIETY ISLANDS: *Raiatea:* Petuna, March 1955, 1♂; Uturoa, 1–100 m., March 1971, 2♂♂, 3♀♀. *Tahiti:* Vaiufaufa, 500 m., April 1971, 1♂; Tiupi Bay, Papeari, May 1934, sweeping grasses and low herbage, 1♂, 1♀.

SOLOMON ISLANDS: *Guadalcanal:* Honiara, 0–200 m., January 1973, 1♀.

SRI LANKA: *Eastern Prov.:* 20 mi. N of Bilile, Kokagala Mountain, stream, March 1962, swept on dry grassland, 1♀; Inginiyagala, March 1962, 2♂♂, 1♀; Nilavel, 8 mi. NNW of Trincomalee, February 1962, meadow, 1♀; 15 mi. SSW of Batticaloa, stream, March 1962, 1♂; Rambukkan Oya, 25 mi. NE of Bibile, March 1962, swept on sedge vegetation of river banks, 27♂♂, 30♀♀. *Kitulgala Prov.:* Sabaragamuwa, 21 mi. N of Ratnapura, March 1962, at light, 30♂♂, 35♀♀. *Northern Prov.:* 7 mi. E of Maukulam, swamp tank, February 1962, swept off vegetation at reservoir, 1♀; 2 mi. E Paralyanalankulam, 20 mi. W of Varuniya, February 1962, swept in dry meadow, 1♂, 4♀♀; Paranthan, 32 mi. SE of Jaffna, February 1962, in sweep net, 2♂♂; Giant's Tank, 10 mi. SE of Mannar, February 1962, at shore, 136♂♂, 92♀♀; 2 mi. E of Mankulam, February 1962, swept at pools with grasses and sedges, 8♂♂, 7♀♀; Mullaittivu, sandy beach, February 1962, swept on grasses and sedges by pools, 16♂♂, 15♀♀. *North Central Prov.:* Wilpattu, N. P. Maradan Maduwa, 23 mi. W of Anuradhapura, February 2, 1962, 1♂, 1♀; Polonnaruwa, February 1962, 1♀; Bulankulama, 7 mi. SW of Anuradhapura, stream at Maha, February 1962, in sweep net, 2♀♀. *North West Prov.:* 5 mi. NNE of Puttalam, February 1962, swamp, 2♂♂; Dedura Oya, 5 mi. NE of Kurunegala, February 1962, in sweep net, 6♂♂, 2♀♀. *Sabaragamuwa Prov.:* Ratnapura, February 1962, 3♀♀. *Southern Prov.:* Telwatta Sanctuary, 6.5 mi. SSE of Ambalangoda, January 1962, in sweep net, 5♂♂, 2♀♀; Hikkaduwa, 11 mi. NW of Galle, January 1962, 1♂, 1♀; Hemmellya, 2 mi. E of Baddegama, 10 mi. N of Galle, January 1962, stream, 1♀; Udugama, 15 mi. NNE of Galle, January 1962, small stream, 1♀. *Uva Prov.:* Mahavell Ganga at Alutnuwara, 24 mi. E Kandy, March 1962, 11♂♂, 1♀. *Western Prov.:* Colombo Colpetty, January 1962, in sweep net, 1♂, 1♀; Peradeniya, January 1903, 1♀ (lectotype, BMNH); Peradeniya, June 1910, 1♂.

THAILAND: *Chiangmai Prov.:* Chiang Dao, June 1965, 4♂♂, 3♀♀; Chiangmai, June 1965, 1♂; Fang, 500–600 m., April–June, 3♂♂, 2♀♀; Mae Klang, 340 m., June 1965, 2♂♂, 3♀♀; Nan, January 1928, 1♂; Pak Chong, December 1957, 3♀♀; Klong Luang, near Bangkok, September 1973, 1♂.

TONGA ISLANDS: *Tongatapu:* Nukualofa, February 1956, 1♂; 0–200 m., November 1969, 1♂.

VIET NAM: Long Binh Post, October 1969, sweeping grassy area, 1♀.

PARASTHENARIDEA MILLER

Parasthenaridea Miller, 1937, p. 535; Schuh, 1974, p. 314.

DIAGNOSIS: Resembling a light-colored *Paramixia* species in size, head and body shape, and the form of the dorsal vestiture which has reclining common setae intermixed with appressed, sericeous, pubescence. The male genitalia unlike those of *Paramixia,* the vesica being rather thick-bodied with three spinose projections on the inner sur-

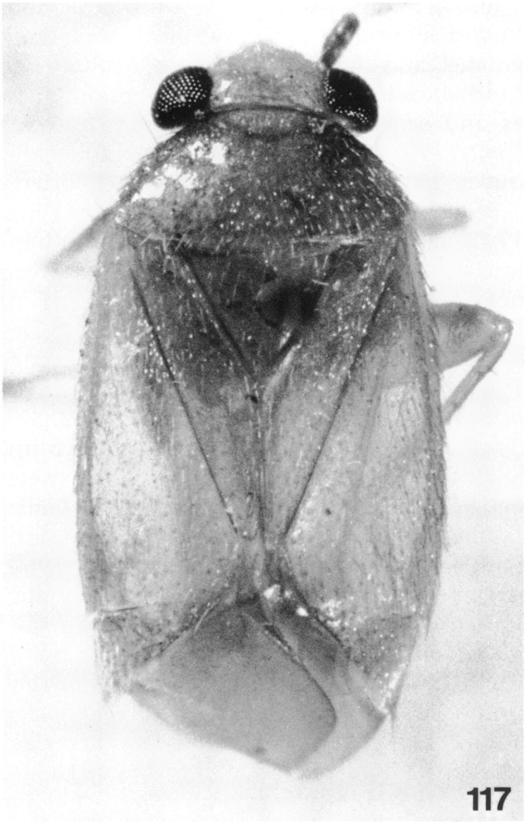


FIG. 117. *Parasthenaridea arecae*, ♂.

face, the phallotheca is more or less rectilinear, and the left paramere splayed out.

DESCRIPTION: Macropterous male. Small, ovoid, length apex tylus-cuneal fracture 2.14, width pronotum 1.15; known species light-colored; dorsum and venter smooth, dull to weakly shining, dorsum and venter uniformly covered with reclining common setae and recumbent, woolly, sericeous setae; antennal segment one with a few (three or four) erect black spines on inner surface, remaining segments with short, neat, recumbent vestiture; posterior margin of vertex with a few erect or semierect fine spines; anterolateral angles of pronotum each with a long, slender, erect spine; all tibiae with semierect spines of length slightly greater than tibial diameter.

Head transverse in dorsal view, frons rounded, weakly protruding between eyes; vertex weakly depressed, posterior margin straight, raised in the form of a low, sharply rounded carina; eyes in lateral view occupying about half of length of head, nearly entire height of head; antennae inserted at level of ventral margin of eyes, inner margin of eyes distinctly emarginate above level of antennal insertion, antennal fossae contiguous with inner margin of eyes; antennal segment one cylindrical but strongly tapering basally, length equal to about one-half of width of vertex, segment two cylindrical, segments three and four slender; bucculae narrow, gula about as long as buccal cavity, horizontal; labium reaching to apex of metacoxae; pronotum weakly convex, lateral margins convexly rounded, posterior margin nearly straight across mesoscutum; mesoscutum narrowly exposed, scutellum very weakly transversely rounded; lateral corial margins weakly convex, cuneal fracture obliquely angled anteromesially, cuneal incisure shallow; cuneus elongate, triangular; cells of membrane with rounded outer margin; all femora very elongate ovoid; metatarsal segments two and three subequal in length, segment one about one-half length of segment two; claws evenly and strongly rounded on outer surface, broad basally, pulvilli absent, parempodia lamellate, recurved, convergent apically.

MALE GENITALIA: Vesica stout, more or less C-shaped, with three spinelike projections on inner surface; phallotheca weakly L-shaped, without dorsal elaborations; left paramere splayed out.

FEMALE: Macropterous. Structure, vestiture, and coloration very similar to male.

FEMALE GENITALIA: Posterior wall with bulge characteristic of Pilophorini.

TYPE SPECIES: *Parasthenaridea arecae* Miller.

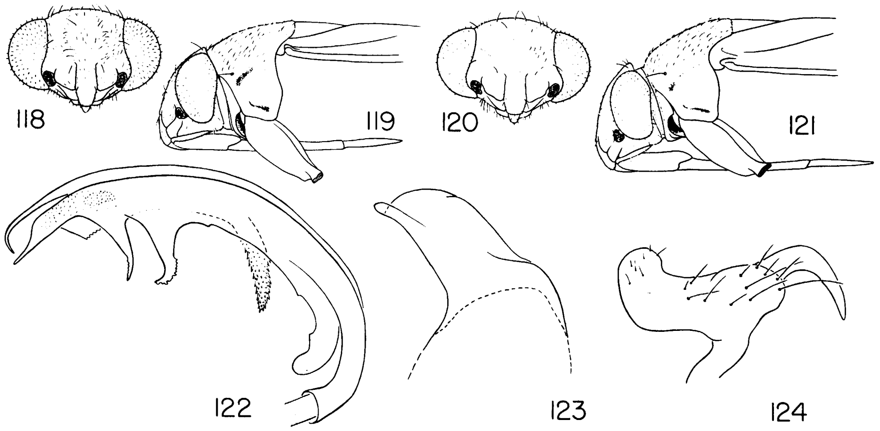
DISTRIBUTION: Malaya.

Parasthenaridea arecae Miller
Figures 117–124

Parasthenaridea arecae Miller, 1937, pp. 535–537.

DIAGNOSIS: The single described species can be recognized by the characters given in the generic diagnosis.

DESCRIPTION: Macropterous male. Relatively small, ovoid, length apex tylus-cuneal fracture 2.14, width pronotum 1.15; general coloration light brownish yellow; antennal segment one completely, and distal two-fifths



FIGS. 118–124. *Parasthenaridea arecae.* 118. Frontal view of head, ♂. 119. Lateral view of head and prothorax, ♂. 120. Frontal view of head, ♀. 121. Lateral view of head and prothorax, ♀. 122. Vesica. 123. Phallotheca. 124. Left paramere.

of segment two maroon; jugae and lora tinged with red; tibial spines light brown.

MALE GENITALIA: Figures 122–124.

FEMALE: See generic description.

FEMALE GENITALIA: Posterior wall with bulge characteristic of Pilophorini.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Malaya.

SPECIMENS EXAMINED: MALAYSIA: *Malaya:* Setapak, August 12, 1934, ex inflorescence of *Areca catechu* (BMNH), 2♂♂, 1♀ (paratypes).

PILOPHORUS HAHN

Pilophorus Hahn, 1826, p. 22.

DIAGNOSIS: Recognized by the elongate body form, the head concave behind and rather closely conforming to the anterior margin of the pronotum, the pronotum more or less trapezoidal, the mesoscutum broadly exposed, and the scalelike setae (fig. 208) aggregated as patches at least laterally, and often also apically, on the scutellum, as a partial or complete transverse band anteriorly on the hemelytra, and as a partial or complete transverse band posteriorly on the hemelytra, sometimes basally on the cuneus, on the posterior margin on the metepimeron, and usually on some abdominal sternites; metathoracic scent-gland evaporatory area as in figure 206; meso- and meta-femoral trichobothria as in figures 203 and 204; claws broadened basally, smoothly and usually strongly curved on dorsal surface, pulvilli absent, parempodia lamellate, recurved, and convergent apically (except in *samoanus*).

MALE GENITALIA: Vesica C- to J-shaped, often with a median spine or barb, secondary gonopore in the form of a small semicircular opening, distally subtended by a series of glassy spicules, apex of vesica relatively simple, largely membranous; phallotheca nearly straight or somewhat angled, often with lobelike projections dorsally; left paramere usually strongly splayed-out, except in *kockensis* and *samoanus* where anterior process is very short and posterior process elevated and greatly elongated.

FEMALE: Usually macropterous, eyes somewhat smaller than in male, vertex relatively wider and face below eyes relatively longer (compare figs. 209, 210 and 211, 212).

FEMALE GENITALIA: Posterior wall with bulging area characteristic of Pilophorini.

DISTRIBUTION: Widely distributed except South America.

DISCUSSION: *Pilophorus* can be recognized, in addition to those characters which define the Pilophorini, as a monophyletic group by the presence of patches of scalelike setae laterally and usually also ventrally on the scutellum. Although not previously used, this character seems to hold for most, if not all, species currently placed in the genus.

ADDITIONAL SPECIMENS: In addition to 26♂♂

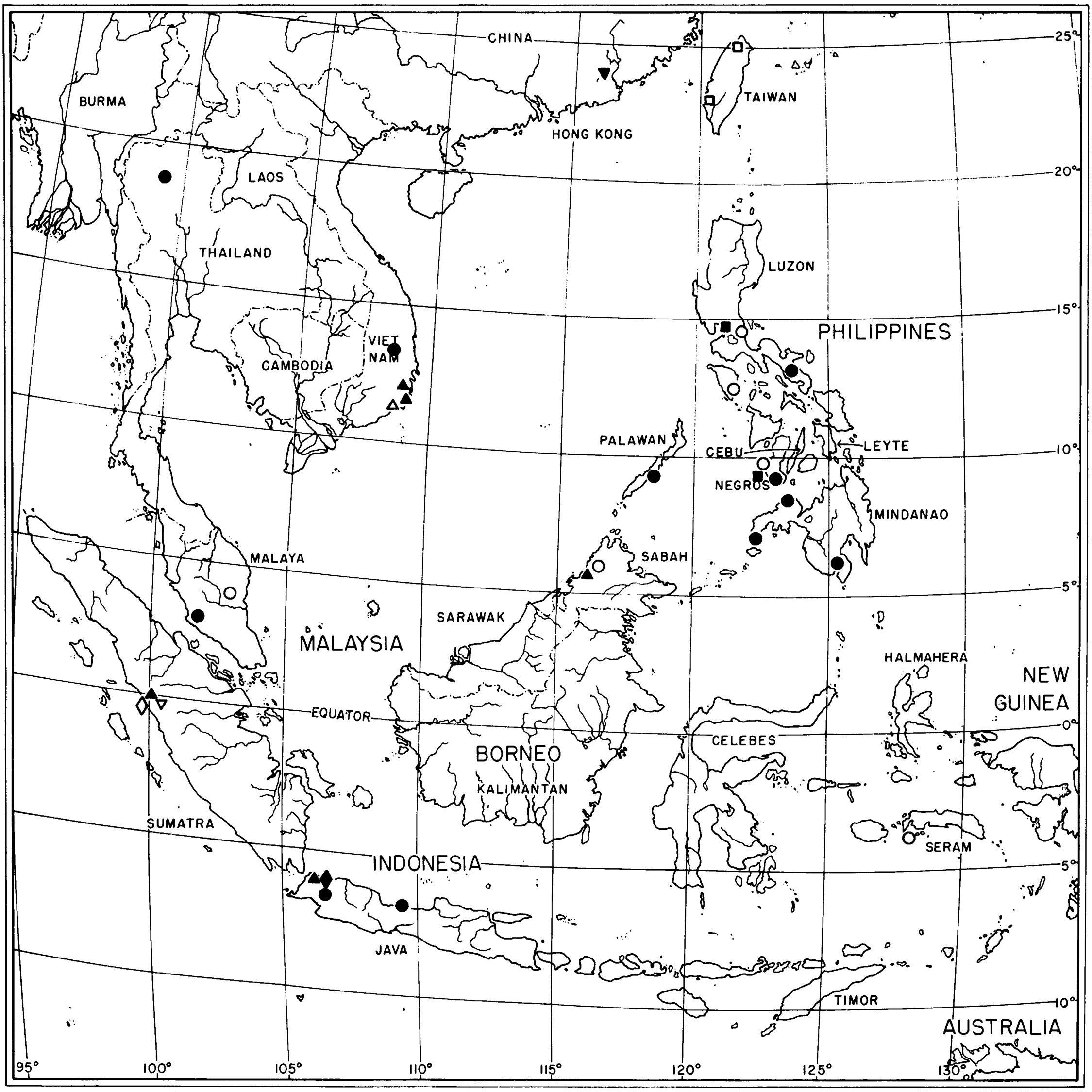

CHINA
BURMA
LAOS
HONG KONG
TAIWAN
THAILAND
LUZON
PHILIPPINES
CAMBODIA
VIET NAM
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
SABAH
MALAYA
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 125. Distribution of *Pilophorus* spp. *P. alstoni* (●); *P. bakeri* (■); *P. dailanh* (▲); *P. formosanus* (□); *P. fyan* (△); *P. javanus* (◆); *P. kockensis* (▽); *P. sumatranus* (◇); *P. torrevillasi* (○); *P. yunganensis* (▼), also from China, West Hupeh Prov.; also *P. niger* from China, West Hupeh Prov. and Japan, Honshu.

and 37♀♀ specimens from the study area which represent material too fragmentary to describe or assign to known species, three specimens of *Pilophorus* are available from northern Queensland, Australia (BMNH, Bishop).

KEY TO *PILOPHORUS* SPECIES

1. Parempodia lamellate, recurved, and convergent apically 2
   Parempodia setiform and weakly curving; Samoa .... *samoanus*
2. Hemelytra with scalelike, appressed, sericeous setae arranged in two partial or complete transverse bands 3
   Hemelytra with scalelike, appressed, sericeous setae scattered on mesial one-third of corium; China (Fukien, West Hupeh) .... *yunganensis*
3. Relatively large species, length apex tylus-cuneal fracture 2.75 or greater 4

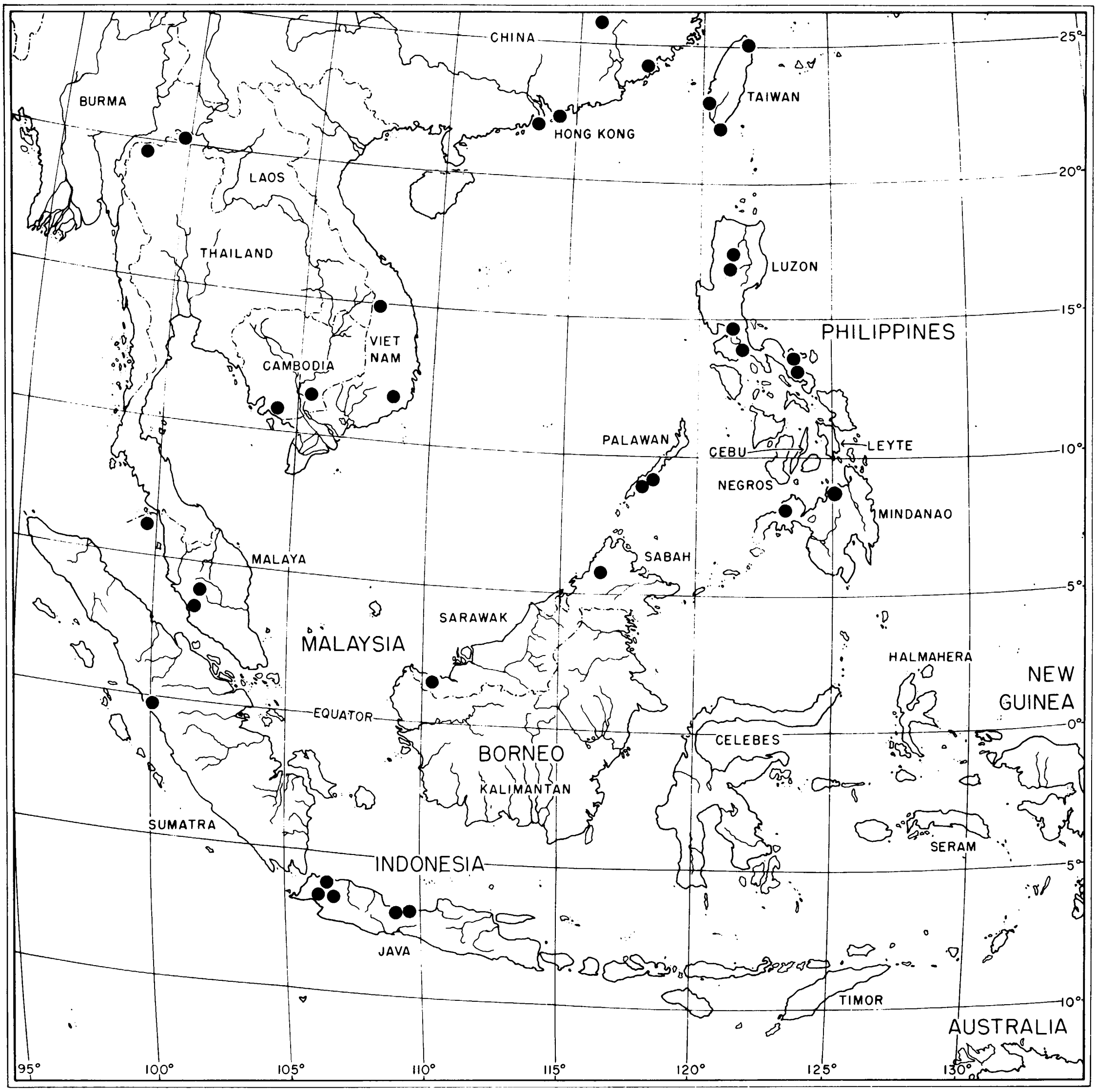

CHINA
25°
BURMA
TAIWAN
HONG KONG
LAOS
20°
THAILAND
LUZON
15°
PHILIPPINES
VIET NAM
CAMBODIA
PALAWAN
CEBU
LEYTE
10°
NEGROS
MINDANAO
MALAYA
SABAH
5°
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
0°
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
5°
JAVA
TIMOR
10°
AUSTRALIA
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 126. Distribution of *Pilophorus typicus* (in part; see also fig. 127).

Smaller species, length apex tylus-cuneal fracture less than 2.50 6

4. Pronotum elongate, ratio length/width about .75; shaft of vesica with a simple median spinelike projection; Viet Nam ..... *fyan*

Pronotum much broader, ratio length/width no greater than .60; where known vesica with only a single median spine 5

5. Generally castaneous with ochraceous hemelytra except posterior one-third of endocorium and posterior one-fourth of clavus; length apex tylus-cuneal fracture 2.87; vesica with a large, trifid, mesial spine; Bonin Islands, Japan .... *setulosus*

Hemelytra darker, generally rich chocolate brown or darker; length apex tylus-cuneal fracture (♀) 3.46; China (West Hupeh), Japan .... *niger*

6. Hemelytra with complete and continuous transverse bands of scalelike sericeous setae at level of apex of scutellum and just anterior to apex of claval commissure; body

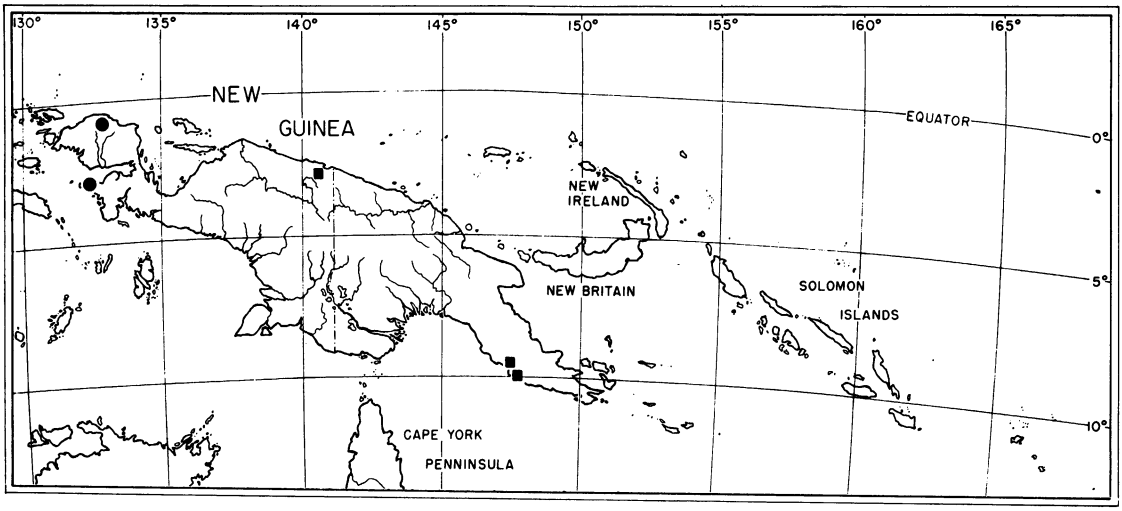


FIG. 127. Distribution of *Pilophorus daradae* (■) and *P. typicus* (●). (See also fig. 126.)

relatively stocky, ratio width pronotum/length apex tylus-cuneal fracture usually greater than .40 7

Hemelytra either with scalelike setae only on corium anteriorly or with anterior band offset and discontinuous; body usually more elongate, ratio width pronotum/length apex tylus-cuneal fracture usually less than .40 10

8. Basic coloration yellow brown, length apex tylus-cuneal fracture 2.37; vesica as in figure 216; Malaya, Northern Borneo, Philippine Islands .... *torrevillasi*

Generally castaneous; smaller, length apex tylus-cuneal fracture less than 2.25 9

9. Anterior two-thirds of corium and clavus yellow brown; vesica as in figure 136; India, Java, Malaya, Indochina, Philippine Islands .... *alstoni*

Anterior two-thirds of corium dark, more or less unicolorous, with remainder of dorsum; Philippine Islands .... *bakeri* (also *sumatranus* from Sumatra)

10. Scalelike sericeous setae on clavus posterior to apex of scutellum distinctly posterior to those on corium; anterior two-thirds of hemelytra golden; vesica as in figures 181 and 182; Sri Lanka .... *pulcher*

Scalelike sericeous setae not present on clavus just posterior to scutellum 11

11. Posterior band of scalelike sericeous setae at about apex of clavus complete 12

Scalelike sericeous setae not forming a complete transverse band at level of apex of scutellum but as a patch mesially on exocorium 14

12. Hemelytra only weakly sinuous laterally, costal margin not reflexed ventrally; pronotum nearly straight sided; left paramere not strongly splayed-out (fig. 174); vesica as in figure 172, without mesial spine; Sumatra .... *kockensis*

Hemelytra strongly sinuous laterally with costal margin reflexed ventrally 13

13. Pronotum highly polished and shining; hemelytra strongly constricted mesially and conspicuously broadened just anterior to cuneal fracture (fig. 131); vesica as in figure 144; Java, Sumatra, Northern Borneo, Viet Nam .... *dailanh*

Pronotum dull, not highly polished and shining; hemelytra moderately constricted mesially and not so greatly expanded posteriorly; vesica as in figure 213; Sri Lanka to Taiwan, south to New Guinea ... *typicus* (also *javanus*; genitalia not dissected)

14. Coloration light yellow-brown, with blood red markings on dorsal surface of metafemora; vesica as in figure 151; New Guinea .... *daradae*

Generally castaneous with anterior two-thirds of clavus and corium golden; vesica as in figure 159; Taiwan .... *formosanus*

Pilophorus alstoni, new species

Figures 125, 129, 132–138

DIAGNOSIS: Recognized, along with *bakeri* and *torrevillasi* (and probably *P. sumatranus* Poppius), by the two complete transverse

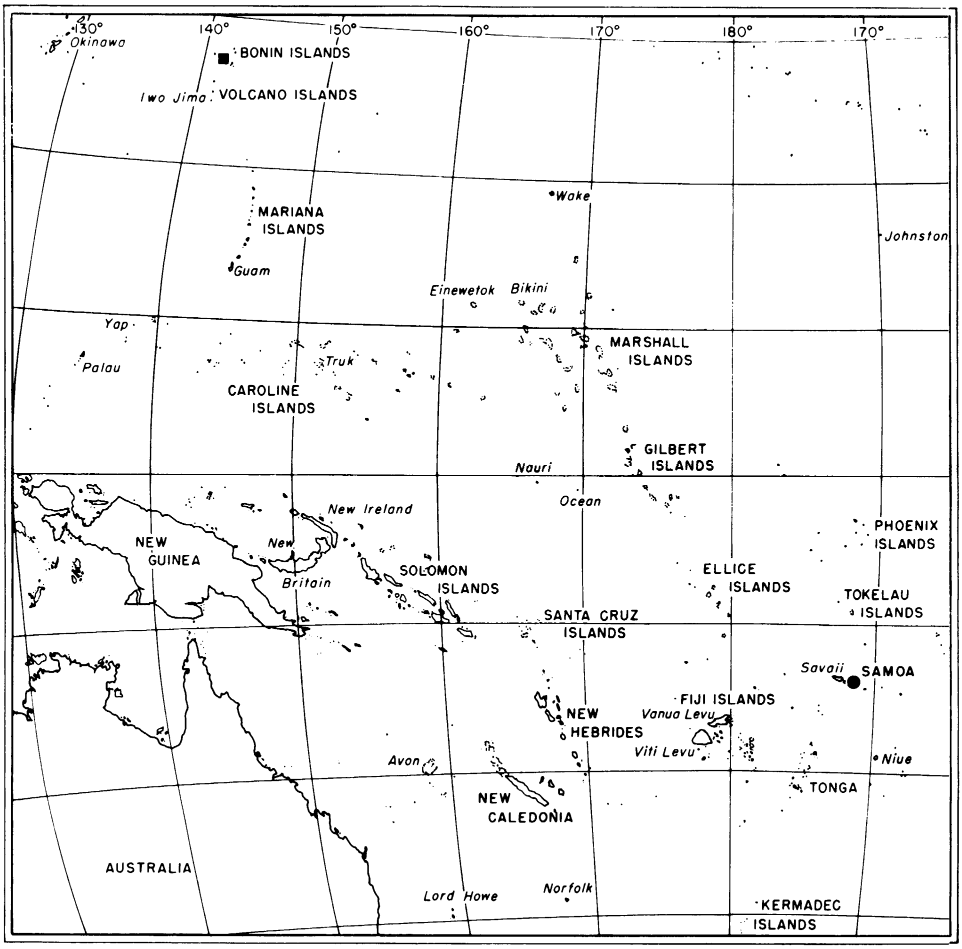
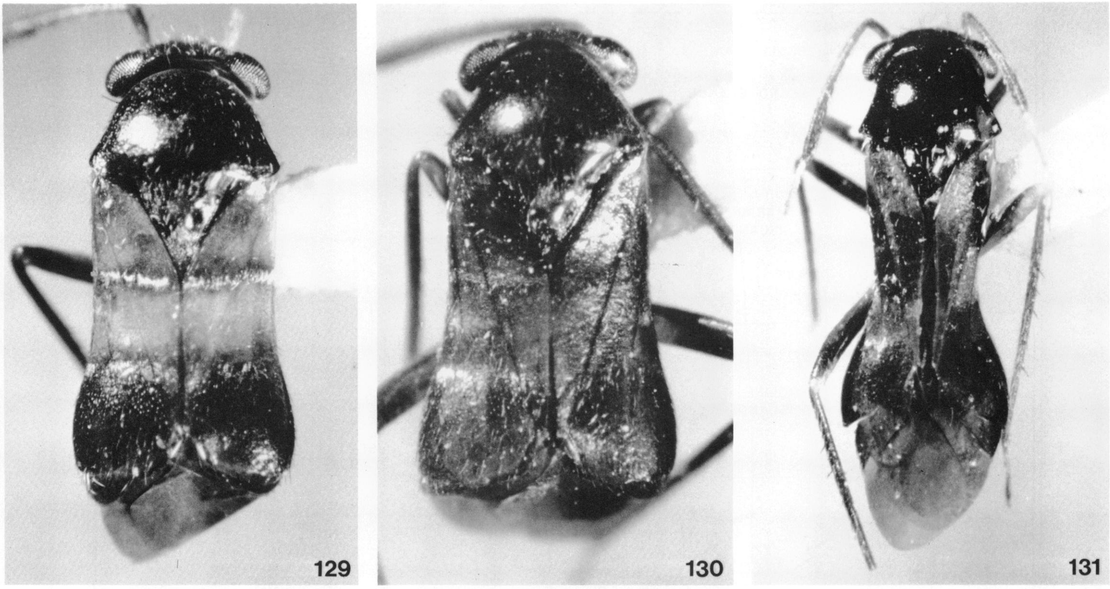

130°
140°
150°
160°
170°
180°
170°
Okinawa
BONIN ISLANDS
Iwo Jima
VOLCANO ISLANDS
MARIANA ISLANDS
Guam
Wake
Johnston
Einewetok
Bikini
Yap
Palau
Truk
CAROLINE ISLANDS
MARSHALL ISLANDS
GILBERT ISLANDS
Nauri
Ocean
New Ireland
NEW GUINEA
New Britain
SOLOMON ISLANDS
PHOENIX ISLANDS
ELLICE ISLANDS
TOKELAU ISLANDS
SANTA CRUZ ISLANDS
Savaii
SAMOA
FIJI ISLANDS
NEW HEBRIDES
Vanua Levu
Viti Levu
Niue
Avon
NEW CALEDONIA
TONGA
AUSTRALIA
Lord Howe
Norfolk
KERMADEC ISLANDS

FIG. 128. Distribution of *Pilophorus samoanus* (●); *P. setulosus* (■), also from Japan (Hokkaido and Honshu).

bands of scalelike setae on the corium and clavus (fig. 129), the baseball-bat-shaped second antennal segment, the patches of silvery scalelike setae laterally and apically on the scutellum, and the moderately sinuous lateral corial margin. Separated from those species by the coloration of the dorsum which is generally yellow-brown on the clavus and corium anterior to the posterior band of scalelike setae, with the remainder of the dorsum deep castaneous, whereas the other species have the dorsum nearly unicolorous, ranging from almost black to light brown. The male genitalia (figs. 136–138) are also distinctive.

DESCRIPTION: Macropterous male. Relatively small, broad-bodied, length apex tylus-cuneal fracture 2.12, width pronotum 0.95; head, pronotum, scutellum posterior one-third of corium and adjacent clavus, cuneus, membrane, thoracic pleuron and venter, and posterior two-thirds of abdomen castaneous; remainder of hemelytra yellow-brown with some infuscation around patches of scalelike setae; appendages varying from castaneous to yellowish, sometimes tinged with red; antennal segment one ventrally, antennal segment four on proximal one-half, procoxae, meso- and meta-trochanters, and all tarsal segments one and two dirty yellow-white.

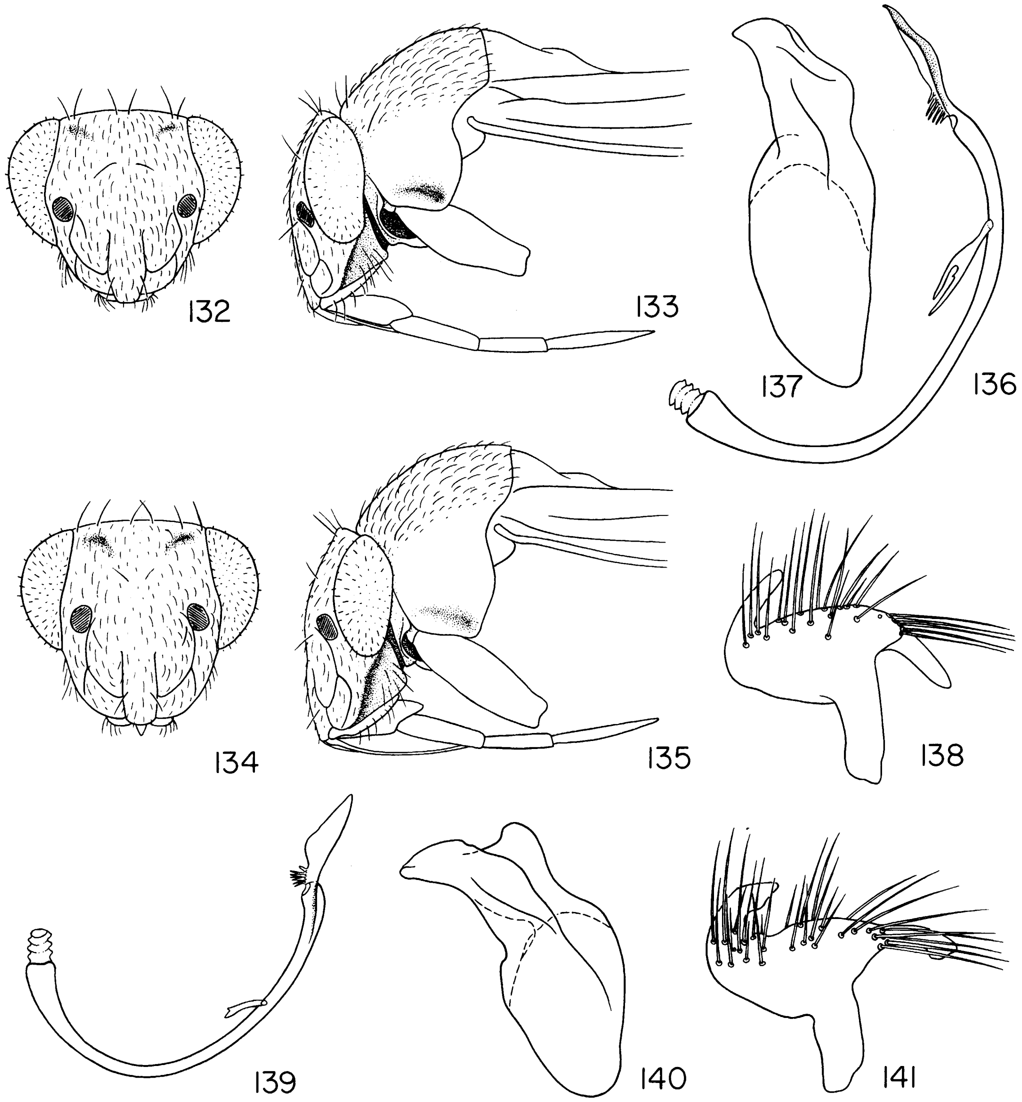
Body surface generally smooth, weakly to rather strongly shining, anterior two-thirds of corium and adjacent clavus with some prui-



FIGS. 129–131. *Pilophorus* spp. 129. *P. alstoni,* ♂, Philippine Islands, Negros Island, Dumaguete. 130. *P. bakeri,* holotype. 131. *P. dailahn,* holotype.

nosity; dorsum covered with moderately long, reclining, pale or brown simple setae; sericeous scalelike setae in the form of two complete transverse bands, one at level of apex of scutellum, the other one-third the distance anterior to apex of claval commissure, and as patches on posterior margin of the metepimeron, and sublaterally on abdominal sternites three, four, and five; posterior one-third of corium and adjacent clavus with appressed, black, weakly scalelike setae; abdominal venter uniformly covered with reclining, pale, simple setae; antennal segment one with interior surface with a few erect black spines, segment two with very short, neat, subappressed vestiture, segments three and four with short, neat, reclining vestiture; pro- and meso-tibiae with two rows of minute black spicules, metatibiae with several rows; protibiae with pale reclining spines on ventral surface, meso- and meta-tibiae with scattered, semierect, rather heavy, black spines; anterolateral angles of pronotum with a long, erect, black spine; genae with some long, erect, brown setae.

Head transverse in dorsal view, shallowly convex posteriorly and more or less conforming to the outline of the anterior pronotal margin (fig. 129); frons and vertex steeply inclined, posterior margin of vertex a sharply rounded carina; head in lateral view short, nearly vertical, head below eyes about two-thirds the height of an eye, in frontal view broadly rounded from ventral margin of eye to apex of tylus, forming a sharply rounded carina (figs. 132, 133); jugae very weakly protuberant, bucculae relatively narrow, buccal cavity very broadly ovoid, labium reaching to apex of mesocoxae, genae small, more or less flat, gula obsolete; antennae inserted about one-third distance above ventral margin of eyes, fossae only very slightly removed from inner margin of eyes (fig. 132), antennal segment one relatively short, tapering basally, segment two baseball-bat-shaped, slightly curved, minimum diameter about equal to that of segment one, segment three slightly smaller in diameter than segment one, segment four more slender than segment three; pronotum weakly tumidiform, anterior and posterior lobes not demarcated, calli not differentiated, posterior margin weakly concavely angulate; mesoscutum moderately broadly exposed, strongly elevated and steeply sloping laterally, indistinctly separated from scutellum; scutellum weakly swollen mesially, flattened apically but hardly at all laterally; hemelytra with lateral margins distinctly sin-



FIGS. 132–141. *Pilophorus* spp. 132–138. *Pilophorus alstoni.* 132. Frontal view of head, ♂. 133. Lateral view of head and prothorax, ♂. 134. Frontal view of head, ♀. 135. Lateral view of head and prothorax, ♀. 136. Vesica. 137. Phallotheca. 138. Left paramere. 139–141. *Pilophorus bakeri.* 139. Vesica. 140. Phallotheca. 141. Left paramere.

uous, broadest just anterior to cuneal incisure, weakly transversely rounded (fig. 129); cuneal fracture nearly perpendicular to corial margin, cuneal incisure shallow, lateral cuneal margin weakly rounded; margin of membrane cells flattened mesially, rounded posteriorly; all femora more or less elongate rectangular, metafemora distinctly arched (not straight); pro- and meso-tibiae cylindrical, protibiae increasing in diameter distally, metatibiae flattened on proximal two-thirds, cylindrical distally.

MALE GENITALIA: Figures 136–138. Vesica weakly C-shaped, shaft with a bifid, forklike median spine, apical elaboration more or less lanceolate; phallotheca beaklike apically, dorsally with two humps.

FEMALE: Macropterous. Figures 134 and 135. See generic description.

FEMALE GENITALIA: Not examined.

Measurements: See Appendix.

Etymology: Named for A. H. G. Alston.

Distribution: Figure 125. India, Java, Malaya, Indochina, and the Philippine Islands.

Holotype ♂: INDONESIA: *Java:* Bogor, September 15, 1954, A. H. G. Alston collector; deposited in the British Museum (Nat. Hist.), London.

Paratypes: INDIA: *Dehra Dun:* Dobhalwalla, 2304 feet, October–November 1946 (Uniyal; USNM), 1♂. INDONESIA: Ambon, 2-08 (CAS), 1♀. *Java:* Tegalega, June 23, 1965 (Winkler; Bishop), 1♂. MALAYSIA: *Malaya:* Kuala Lumpur, July 10, 1932 (Pendlebury; BMNH), 1♀. PHILIPPINE ISLANDS: *Luzon:* Albay Prov., Libon Caguscos, May 18, 1965 (Torrevillas; Bishop), 1♂. *Mindanao:* Cotabato, General Santos, August 15, 1958 (Milliron; Bishop), 1♂; Davao Prov., Calian, July 16 (Clagg; AMNH), 1♀; Zamboanga del Sur, Zamboanga, July 29, 1958 (Milliron; Bishop), 1♂; Dapitan (Baker; USNM), 1♀. *Mindoro:* San Jose, June 5, 1945 (Ross; CAS), 1♂, 1♀. *Negros Island:* Dumaguete, Camp Lookout, 1300 feet, February 15–April 15, 1961 (Schneirla and Reyes; AMNH), 1♂. *Palawan:* 3 km. NE of Tinabog, May 11, 1962, light trap (Holtmann; Bishop), 1♂. [*Uncertain location in Philippines*]: 1958 (Milliron; Bishop), 1♀. VIET NAM: M'Drak E of Ban Me Thout, 4–600 m., December 8–19, 1960 (Yoshimoto; Bishop), 1♀. THAILAND: Chiangmai, April–May 1952, light trap (Thurman; USNM), 1♂.

Pilophorus bakeri, new species

Figures 125, 130, 139–141

Diagnosis: Recognized as in diagnosis for *alstoni.* Distinguished by its generally castaneous coloration, and by the form of the male genitalia.

Description: Macropterous male. Relatively small, broad-bodied, length apex tylus-cuneal fracture 2.12, width pronotum 0.93; basic coloration castaneous; antennal segment one ventrally, antennal segments three (sometimes) and four proximally, procoxae, metatrochanters, pro- and meso-femora distally, and all tarsi nearly white.

Surface texture and vestiture as in *alstoni.*

Structure and size very similar to *alstoni.*

Male Genitalia: Figures 139–141. Vesica more or less J-shaped with a barbed (bifid) mesial process on shaft, apical elaboration more or less elongate; phallotheca weakly attentuated distally, with a well-developed dorsal hump.

Female: Unknown.

Measurements: See Appendix.

Etymology: Named for C. F. Baker.

Distribution: Figure 125. Philippine Islands.

Holotype ♂: PHILIPPINE ISLANDS: *Luzon:* Mt. Makling, C. F. Baker collector; deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (Type No. 100411).

Paratypes: Same data as holotype (USNM), 1♂. PHILIPPINE ISLANDS: *Luzon:* Rizal Prov., Mt. Montalban, Wa-Wa Dam, March 6–9, 1965 (Torrevillas; AMNH, Bishop), 2♂♂. *Negros Oriental:* Lake Balinsassayao, October 1–7, 1959 (Yoshimoto; Bishop), 1♂.

Pilophorus dailanh, new species

Figures 125, 131, 142–146

Diagnosis: Recognized by the elongate, slender, body form, the highly polished head, pronotum, and scutellum, the strongly ventrally reflexed and mesially constricted hemelytra, and the form of the male genitalia.

Description: Macropterous male. Moderate-sized, body elongate, constricted mesially; length apex tylus-cuneal fracture 2.28, width pronotum 0.87; basic coloration castaneous to brownish black, large areas of anterior two-thirds of corium and clavus and posterior one-third of membrane pruinose; proximal one-third of antennal segment three white; antennal segment one, proximal two-thirds of antennal segment two, procoxae, metacoxae distally meso- and meta-trochanters, protibiae, distal one-half of metatibiae, tibofemoral articulation of metaleg, and all tarsal segments one and two dirty yellow-white; face below eyes orange-brown.

Body surface smooth, head, pronotum, scutellum, thoracic pleuron and venter, abdominal venter, and femora very highly polished and shining (fig. 131); anterior three-fourths of corium and most of clavus, scent-gland evaporatory area, and meso- and metacoxae dull, mostly pruinose; posterior one-fourth of corium, entire cuneus, and anterior two-thirds of membrane weakly shining; body sparsely covered with decumbent, relatively long, shining simple setae; sericeous scalelike setae in the form of patches anterolaterally and apically on scutellum, as an incomplete transverse band on corium at level of apex of scutellum, as a complete transverse band on clavus and corium just anterior to apex of clavus, as a patch on the posterior margin of the metepimeron, and on abdominal sternite three; clavus and corium with some golden woolly setae; antennal segment one with scattered subappressed pale setae, segment two with relatively pale reclining setae intermixed with finer reclining pale setae, segments three and four with reclining and suberect pale fine setae; pro- and meso-femora with two rows of minute black spicules, metafemora with several rows; protibiae with reclining pale spines about as long as tibial diameter, mostly distoventrally; meso- and meta-femora with numerous, reclining pale, fine spines.

Head extremely narrow as viewed from above, posterior margin of vertex and eyes nearly semicircular in outline and conforming closely to anterior margin of pronotum (fig. 131); vertex and frons nearly vertical, posterior margin of vertex finely carinate; head elongate dorsoventrally, height of head below eyes slightly more than one-half of height of an eye (figs. 142, 143); jugae not protuberant; face below eyes in the form of a broadly rounded ridge; bucculae relatively narrow, buccal cavity egg-shaped; genae flat to weakly convex, gula vertical; slightly longer than diameter of antennal segment one; labium reaching to apex of metacoxae; antennae inserted as in figure 142; antennal segment one rather slender, cylindrical, segment two tapering proximally, more or less baseball-bat-shaped, segments three and four very slender, subequal in diameter and length, combined length about equal to length of segment two; pronotum subtumidiform, calli indistinct, lateral margins shallowly convex, posterior margin nearly straight across mesoscutum; mesoscutum rather broadly exposed, steeply declining posteriorly and laterally, separated from scutellum by a fine transverse impression; scutellum flattened laterally and posteriorly, depressed anteromesially, weakly swollen mesially; hemelytra with lateral margins strongly reflexed ventrally and strongly sinuous, narrowest at about midpoint of claval commissure, widest just anterior to cuneal incisure, hemelytra rather strongly transversely rounded (fig. 131); cuneal fracture rather sharply angled anteromesially, cuneal incisure distinct, cuneus weakly rounded laterally; posterior margin of membrane cells broadly rounded; abdomen very strongly constricted basally, expanded and more or less bulbous on posterior one-half; profemora tapering distally, meso- and meta-femora nearly tubular, weakly flattened; all tibiae cylindrical.

Male Genitalia: Figures 144–146. Vesica roughly J-shaped, shaft with a median barb; phallotheca more or less linear in form, apex weakly acuminate, dorsal surface without flaplike elaboration.

Female: Macropterous. As in generic diagnosis; posterior margin of head less strongly curved than in male; pronotum more nearly quadrate; hemelytral proportions slightly more elongate; abdomen strongly constricted basally as in male, much deeper dorsoventrally.

Female Genitalia: Not examined.

Measurements: See Appendix.

Etymology: Named for the type locality; a noun in apposition.

Distribution: Figure 125. Viet Nam, Java, Sumatra, northern Borneo.

Holotype ♂: VIET NAM: Dai Lanh N of Nha Trang, November 30–December 5, 1960, C. M. Yoshimoto collector; deposited in the B. P. Bishop Museum, Honolulu.

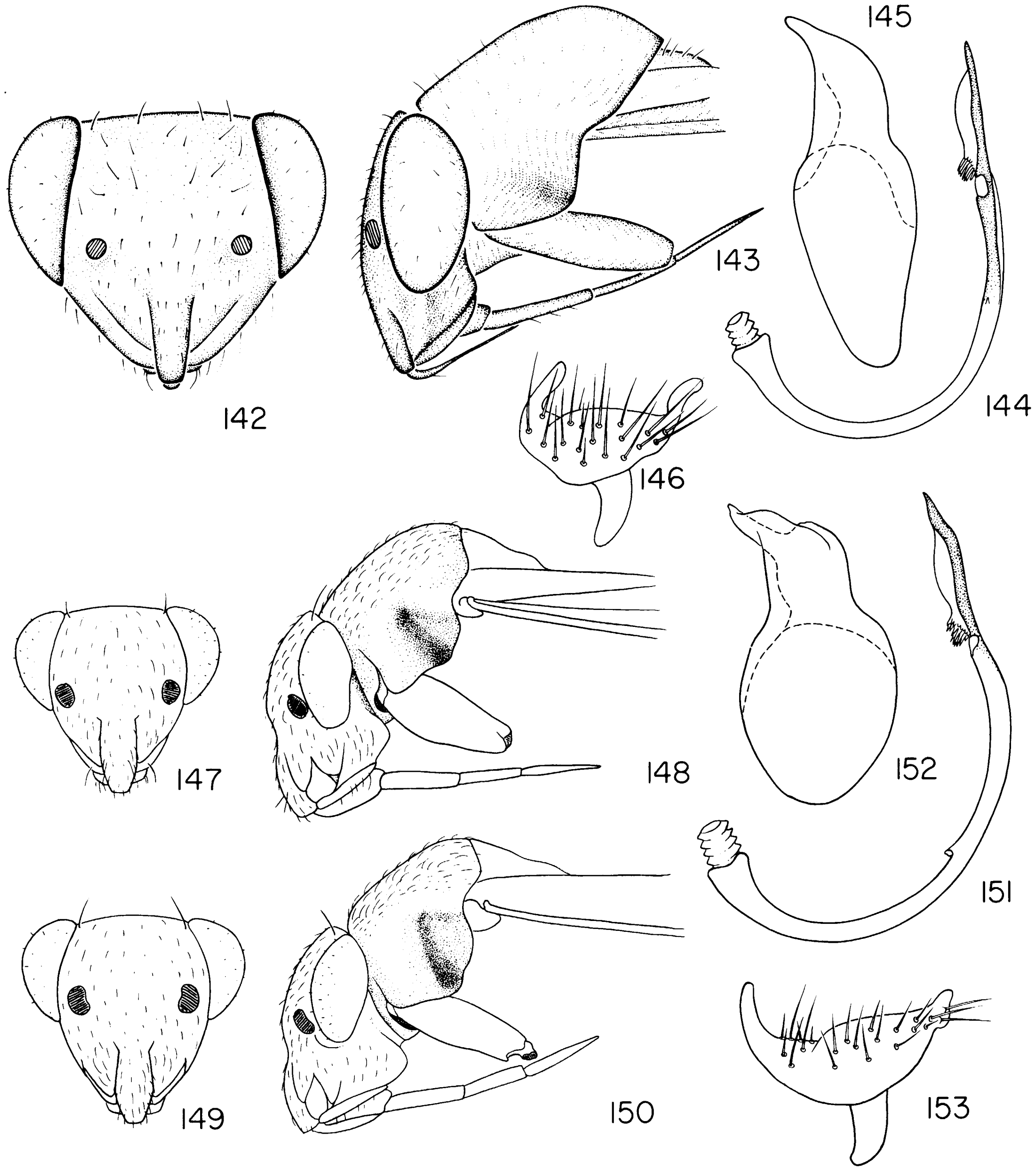
Paratypes: Same data as holotype (Bishop), 1♂, 1♀.

Additional Specimens: INDONESIA: *Java:* Tjiomas, July 11, 1965 (Winkler; Bishop). *Sumatra:* Fort de Kock, 920 m., 1925 and 1926 (Jacobsen; Leiden), 2♂♂. MALAYSIA: *Sabah:* Tambunan, January 8, 1959 (Maa; Bishop), 1♀.

Pilophorus daradae, new species

Figures 127, 147–153, 154

Diagnosis: Recognized by the light yellow-brown general coloration with reddish eyes and blood red markings on the antennae and



FIGS. 142–153. *Pilophorus* spp. 142–146. *Pilophorus dailahn.* 142. Frontal view of head, ♂. 143. Lateral view of head and prothorax, ♂. 144. Vesica. 145. Phallotheca. 146. Left paramere. 147–153. *Pilophorus daradae.* 147. Frontal view of head, ♂. 148. Lateral view of head and prothorax, ♂. 149. Frontal view of head, ♀. 150. Lateral view of head and prothorax, ♀. 151. Vesica. 152. Phallotheca. 153. Left paramere.

metalegs, by the weakly but unmistakably demarcated anterior and posterior lobes of the pronotum, and by the form of the male genitalia.

DESCRIPTION: Macropterous male. Medium-sized, body moderately elongate, length apex tylus-cuneal fracture 2.10, width pronotum 0.79; general coloration light yellow-brown; antennal segment one on dorsal surface, most of antennal segment two (especially on distal one-half), dorsal half of metafemur and metatibiae blood red; exocorium at cuneal fracture broadly dark brown.

Body surface generally smooth, dull, abdominal venter shining; vestiture of pale, recumbent, short, simple setae; antennal vestiture short, neat, subappressed; scalelike sericeous setae in patches apically on scutellum, on exocorium slightly posterior to level of apex of scutellum and on endocorium just posterior to patch on exocorium, just anterior to apex of clavus, on exocorium at level of apex of clavus and just laterad of radius, on posterior margin of metepimeron, and laterally on abdominal sternite four; pro- and meso-tibiae with two rows of minute black spicules, metatibiae with several rows; all tibiae with slender, pale, recumbent spines, metatibiae with a few, generally pale, reclining spines.

Head transverse in dorsal view, about four times as wide as long, frons evenly convex, distinctly projecting anteriorly beyond eyes, eyes distinctly projecting laterally beyond pronotal margins; posterior margin of vertex smoothly concave in the form of a sharply rounded carina (fig. 154), nearly straight across between eyes in frontal view; head in frontal view more or less triangular, height below eyes nearly equal to the height of an eye (figs. 147, 148); tylus projecting somewhat, not forming a smooth contour with remainder of face; head below eyes in the form of a very broadly rounded ridge; jugae not protuberant, buccal cavity roughly egg-shaped, bucculae relatively narrow; genae more or less flat; gula angled, about twice as long as diameter of antennal segment one; labium slightly surpassing apex of mesocoxae; antennae inserted just above ventral margin of eyes, fossae removed from eyes by distance equal to about one-half diameter of fossa, inner margin of eyes nearly straight (fig. 147); antennal segment one relatively short, appearing weakly swollen, segment two cylindrical, slightly curving (arched), diameter about equal to greatest diameter of segment one, segments three and four very slender, subequal in diameter (badly mutilated in all available specimens); pronotum with anterior and posterior lobes demarcated by a weak constriction, anterior lobe slightly shorter than posterior, more or less cylindrical, straight-sided; calli not demarcated, anterior margin nearly straight, posterior lobe of pronotum rather strongly angled posterolaterally, rather strongly arched dorsally, posterior margin straight (fig. 154); mesoscutum very broadly exposed, inclined, rather steeply sloping laterally, separated from scutellum by a fine, nearly straight transverse impression; scutellum very weakly elevated mesially, flat laterally and posteriorly; lateral corial margins conspicuously sinuous, broadest slightly anterior to cuneal fracture, somewhat reflexed ventrally; hemelytra strongly transversely rounded, cuneal fracture slightly angled anteromesially, cuneal incisure shallow, lateral cuneal margin weakly rounded, posterior margin of membrane cells obscurely angulate; pro- and meso-femora slender, more or less cylindrical, metafemora arched (not straight), and tapering somewhat distally; all tibiae cylindrical, protibial diameter increasing slightly distally.

MALE GENITALIA: Figures 151–153. Vesica C-shaped, median spine on shaft of uncertain form (broken during dissection); phallotheca with an upturned apex, dorsal surface with two lobelike elaborations.

FEMALE: Macropterous. See generic diagnosis.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 127. New Guinea.

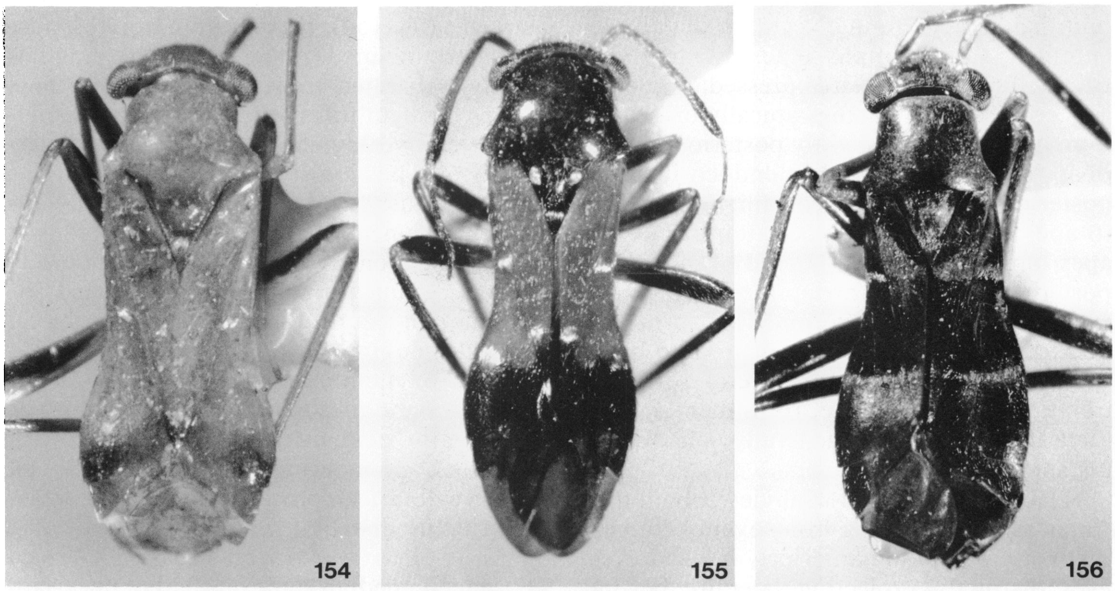
HOLOTYPE ♂: PAPUA NEW GUINEA: *Central Prov.:* Daradae Plantation, 80 km. N to Port Moresby, September 4, 1959, sweeping, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 1♂, 4♀♀. INDONESIA: *Irian Jaya:* Cyclops Mountains, Ifar, 300 m., June 21, 1959 (Maa; AMNH, Bishop), 1♂, 1♀. PAPUA NEW GUINEA: *Central Prov.:* Bisianumu Station, 40 km. NNW of Port Moresby, April 28, 1960 (O'Brien; Bishop), 1♀.

Pilophorus erraticus Linnavuori

Pilophorus erraticus Linnavuori, 1962, p. 170.

DISCUSSION: Linnavuori (1962) described this species from a male and female specimen from Honshu, Japan. He compared it to *P. miyamotoi* Linnavuori, *P. perplexus* (Douglas and Scott) and *P. pusillus* Reuter and gave an illustration of the head and thorax. I have not examined specimens of *erraticus*.



FIGS. 154–156. *Pilophorus* spp. 154. *P. daradae,* holotype. 155. *P. formosanus,* ♂, Taiwan, Kwantzeling. 156. *P. fyan,* holotype.

Pilophorus formosanus Poppius
Figures 125, 155, 157–161

Pilophorus formosanus Poppius, 1914b, p. 238.

DIAGNOSIS: Macropterous male. Recognized by the brown head, pronotum and scutellum the golden anterior three-fourths of the corium (and all but extreme posterior portion of clavus), the brown black posterior one-fourth of the corium, the entire cuneus, and membrane, the proximal two-thirds of antennal segment two light brown, the distal third brown-black, the patches of scalelike sericeous setae laterally on the mesoscutum, subapically on the scutellum, as an incomplete transverse band on endocorium at about the midpoint of the corium, as a patch mesially on exocorium (not attaining costa) at level of apex of clavus, and as a patch on apex of clavus, the distinctly keel-like genae below the eyes, the strongly basally constricted abdomen, the tubular tibiae, and the form of the male genitalia, especially by the vesica which has a simple "hook" on the shaft. Moderate-sized, rather slender-bodied, length apex tylus-cuneal fracture 2.33, width pronotum 0.93.

MALE GENITALIA: Figures 159–161.

FEMALE: Macropterous. Similar in coloration, surface texture, vestiture, and structure to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

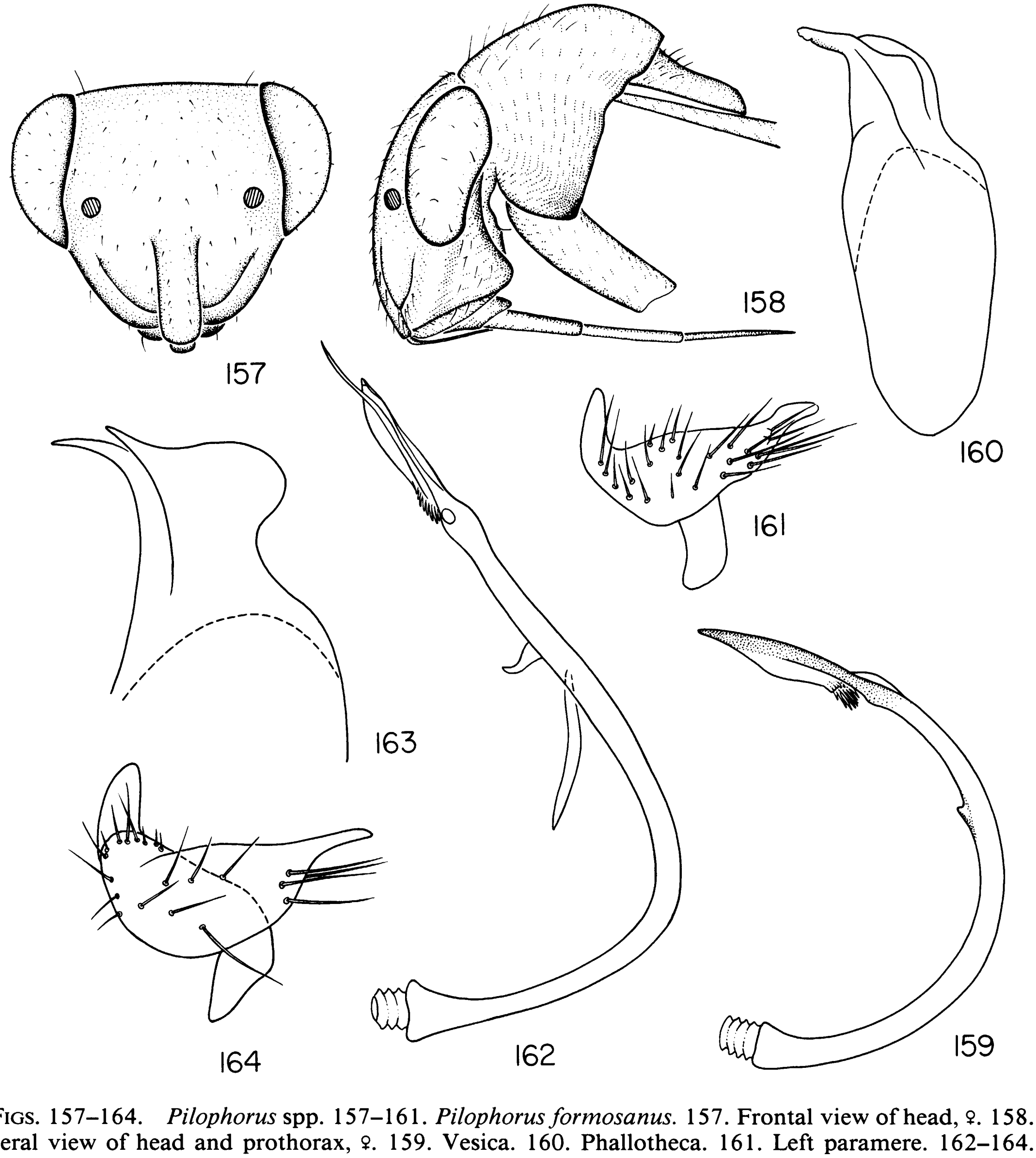
DISTRIBUTION: Figure 125. Taiwan.

SPECIMENS EXAMINED: TAIWAN: Kwantzeling, Tainan Hsien, 250 m., April 6–7, 1965 (Yoshimoto; Bishop), 1♀; Kosempo, 908 (Sauter; Budapest), 1♀ (holotype); Shuangchi, 15 mi. NW of Taipei, February 19, 1972 (Maa; Bishop), 1♂; Taipei Hsien, Museh, 150 m., September 19, 1957 (Maa; Bishop), 1♀; Wulsi near Taipei, 300–500 m., September 23, 1957 (Maa; AMNH), 1♂.

Pilophorus fyan, new species
Figures 125, 156, 162–164

DIAGNOSIS: Recognized by the blackish coloration, the laterally strongly rounded pronotum, and the form of the male genitalia. The general body form, especially the shape of the pronotum is very much like that of *samoanus*; however, the parempodia are typical of most Pilophorini, in contrast to those found in *samoanus.*

DESCRIPTION: Macropterous female. Relatively large, body form elongate, more or



FIGS. 157–164. *Pilophorus* spp. 157–161. *Pilophorus formosanus.* 157. Frontal view of head, ♀. 158. Lateral view of head and prothorax, ♀. 159. Vesica. 160. Phallotheca. 161. Left paramere. 162–164. *Pilophorus fyan.* 162. Vesica. 163. Phallotheca. 164. Left paramere.

less cylindrical, length apex tylus-cuneal fracture 3.08, width pronotum 1.02; general coloration charcoal gray to black, most of face below eyes, protibiae, mesotibiae distally, and all tibofemoral articulations dirty yellowish or yellow-brown; antennal segment one ventrally, proximal one-fourth of antennal segments three, procoxae, distal one-half of metacoxae, and meso- and meta-trochanters white or dirty white; hemelytra marked with pruinosity and patches of silvery scalelike setae.

Body surface smooth, dull; clavus, corium, and membrane largely pruinose; dorsum with some very short, subappressed, pale or brown, common setae, abdominal venter with longer, semierect, pale, fine setae; scutellum anterolaterally and apically with patches of tiny, appressed sericeous setae; corium at level of apex of scutellum and corium and clavus one-third distance anterior to apex of clavus with transverse bands of appressed, sericeous scalelike setae; posterior margin of metepimeron and posterior one-half of abdominal sternite three with appressed, sericeous, scalelike setae; genae and gula with scattered, erect, black setae; anterolateral angles of pronotum with an erect, fine, black spine; all antennal segments with fine, short, pale, recumbent pubescence, segments three and four with a few semierect setae; all tibiae with a few, short, reclining, pale or brown spines, most on ventral surfaces; protibiae with two rows, meso- and meta-tibiae with several rows of minute black spicules.

Head transverse in dorsal view, frons only very weakly projecting anteriorly beyond eyes, posterior margin of vertex and eyes strongly concavely rounded and roughly conforming to outline of anterior margin of pronotum (fig. 156); vertex and frons strongly inclined, posterior margin of vertex in the form of a sharply rounded carina; in lateral view height of head below eyes about equal to height of an eye; jugae slightly protuberant; buccal cavity very broad anteriorly, narrowing posteriorly, bucculae moderately broad; face below eyes very broadly rounded, not carinate; genae more or less flat; gula inclined, about as long as one and one-half times diameter of antennal segment one; labium not quite attaining posterior margin of mesosternum; antennae inserted above ventral margin of eye by distance about equal to diameter of antennal fossa, fossae slightly removed from inner margin of eyes; antennal segment one not enlarged, elongate, cylindrical, segment two baseball-bat-shaped, greatest diameter about one and one-half times diameter of segment one, segments three and four very slender, subequal in diameter and length, combined length no greater than length of segment two; pronotum strongly rounded transversely, lateral margins not angulate, much less strongly rounded longitudinally, lateral pronotal margins nearly straight on anterior two-thirds, posterior one-third flaring, posterior margin weakly concavely angulate across mesoscutum, rounded laterally to posterolateral angle; mesoscutum relatively broadly exposed, indistinctly separated from scutellum, distinctly elevated and sloping laterally; scutellum elongate, weakly elevated mesially, flattened laterally and posteriorly; hemelytra with sinuous lateral margin reflexed ventrally at about midpoint, corium broadest on posterior one-third, distinctly transversely rounded; cuneal fracture weakly angled anteromesially, cuneal incisure distinct, cuneus broadly rounded laterally; posterior margin of membrane cells broadly rounded; all femora elongate rectangular; all tibiae stout, protibiae weakly flattened, meso- and meta-tibiae more strongly flattened.

FEMALE GENITALIA: Not examined.

MALE: Macropterous. Coloration, surface texture, and vestiture as in female; eyes somewhat larger and vertex relatively narrower, face somewhat more slender, pronotum more strongly narrowed anteriorly, and hemelytra of more elongate proportions than in female.

MALE GENITALIA: Figures 162–164. Vesica more or less L-shaped, with two median spines on shaft, one elongate and lancelike, the other thornlike, apically with an elongate spicule and a broader membranous elaboration; phallotheca acuminate, bifid in single available dissection, with a large humplike elaboration on dorsal surface.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 125. South Viet Nam.

HOLOTYPE ♀: VIET NAM: Fyan, 1200 m., July 11–August 9, 1969, N. R. Spencer collector; deposited on the B. P. Bishop Museum, Honolulu.

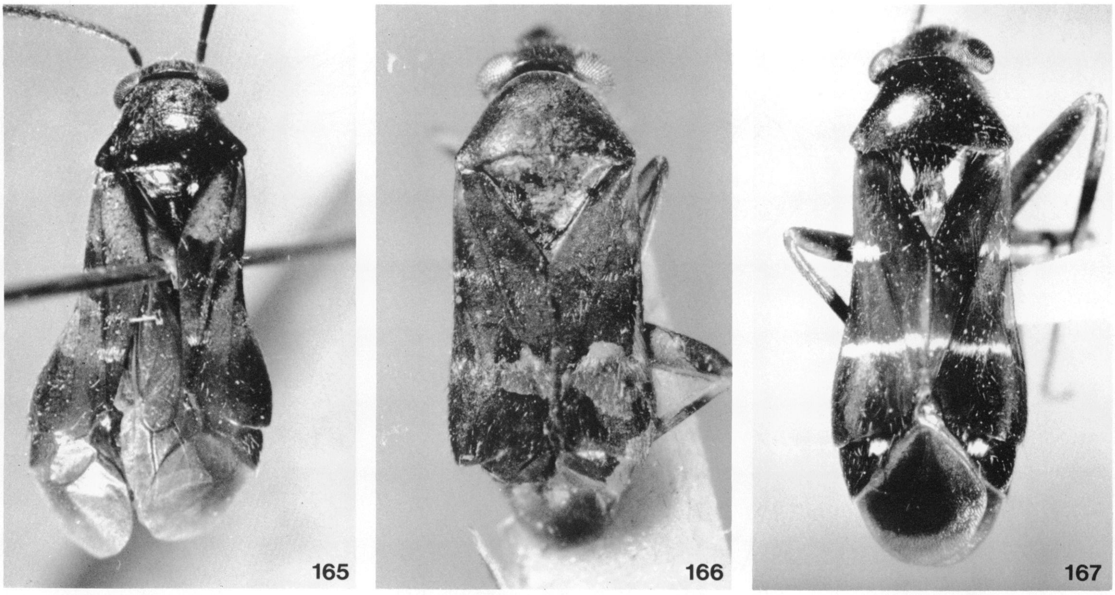
PARATYPES: VIET NAM: Dalat, 1500 m., April 29–May 4, 1960 (Quate and Quate; Bishop), 1♀; 6 mi. S of Dalat, 1400–1500 m., June 9–July 7, 1961 (Spencer; AMNH), 1♀; Mt. Lang Bian, 1500–2000 m., May 19–June 8, 1961 (Spencer; Bishop), 1♂.

Pilophorus javanus Poppius

Figures 125, 165

Pilophorus javanus Poppius, 1914c, p. 168.

DIAGNOSIS: Recognized by the generally castaneous coloration, the first antennal segment ventrally and most of the pro- and metacoxae white (all legs and antennal segments three and four missing in the only specimen,



FIGS. 165–167. *Pilophorus* spp. 165. *P. javanus,* holotype. 166. *P. kockensis,* holotype. 167. *P. niger,* ♂, China, West Hupeh Prov., Suisepa.

the holotype), the anterior transverse band of scalelike setae incomplete and occurring only on the corium, the posterior band complete, the face below the eyes nearly straight, the face in frontal view appearing more or less triangular, antennal segment two increasing slightly in diameter distally, the pronotum weakly but distinctly rugulose, the corial margin distinctly sinuous, and the hemelytra widest just anterior to the cuneal incisure. Distinctive patches of scalelike setae present laterally on the scutellum but presumably rubbed off apically.

Male Genitalia: Not examined.

Female: Unknown.

Measurements: See Appendix.

Distribution: Figure 125. Java.

Specimen Examined: INDONESIA: *Java:* Banjoewangi, 1909 (MacGillavry; Helsinki), 1♂ (holotype).

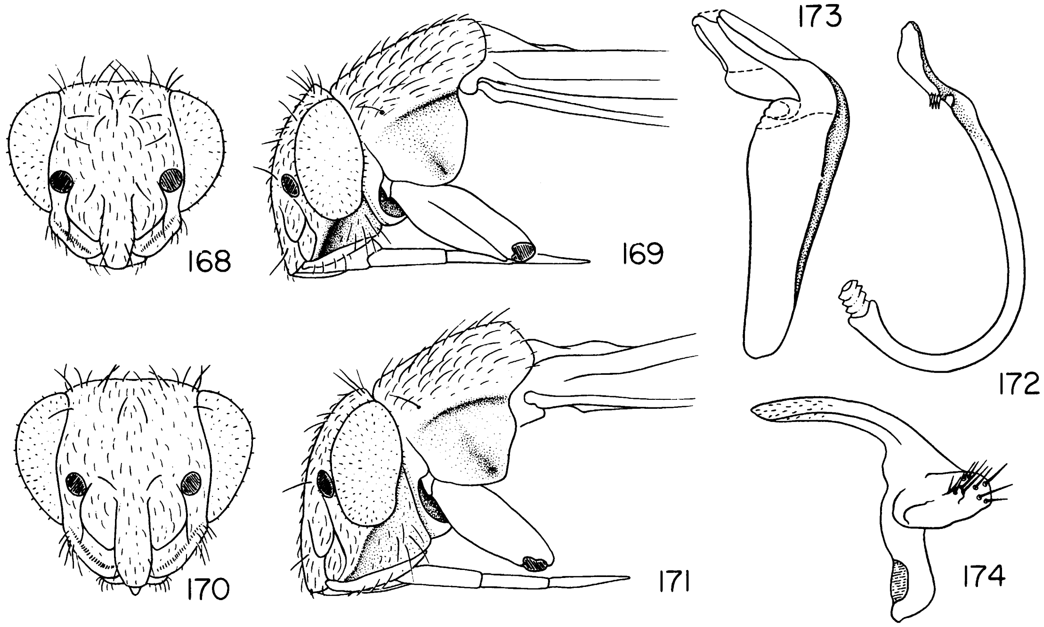
Discussion: This taxon is very close to *typicus* Distant and may indeed be conspecific with it. Only the holotype male is available. It is somewhat multilated, with all legs and antennal segment three and four missing. Critical study of this and several other species of *Pilophorus* will have to await collection of additional specimens.

Pilophorus kockensis, new species

Figures 125, 166, 168–174

Diagnosis: Recognized by the relatively narrow head which is only three-fourths of the greatest pronotal width, the accompanying relatively narrow interocular space (interocular space/width of head 17/37), the form of the pronotum which is strongly rounded anteriorly, angled posteriorly with nearly straight sides and weakly elevated, the nearly straight unreflexed lateral corial margins, and the form of the male genitalia in which the vesical shaft has no mesial spine (fig. 172) and the left paramere is not strongly splayed out, has a very short anterior process, and a long elevated posterior process (fig. 174).

Description: Macropterous male. Moderate-sized, elongate, length apex tylus-cuneal fracture 2.28, width pronotum 0.97; general coloration castaneous or brown-black, without distinctive dorsal markings; ventral half of antennal segment one, proximal half of segment three, proximal two-thirds of procoxae, distal two-thirds of metacoxae, protibiae and tarsi, mesotarsi, metatibiae proximally, metatarsal segments one and two, and meso- and meta-trochanters nearly white.



FIGS. 168–174. *Pilophorus kockensis*. 168. Frontal view of head, ♂. 169. Lateral view of head and prothorax, ♂. 170. Frontal view of head, ♀. 171. Lateral view of head and prothorax, ♀. 172. Vesica. 173. Phallotheca. 174. Left paramere.

Body surface generally smooth and dull, posterior one-third of corium and entire cuneus weakly polished; corium anterior to polished area and clavus posterior to apex of scutellum generally pruinose; dorsum, including frons and vertex, generally covered with reclining, brown, common setae; sericeous scalelike setae in the form of patches anterolaterally and apically on scutellum, as an incomplete transverse band on the corium at the level of the apex of the scutellum, and as a complete transverse band at level midway between apex of scutellum and apex of clavus; cuneus with recumbent, golden, woolly setae between transverse bands of scalelike setae; abdominal venter with reclining common setae and recumbent, sericeous, scalelike setae at least on sternites three, four, and five; thoracic pleuron with some sericeous setae, although badly rubbed in most known specimens; pronotum with an erect spine on anterolateral angles; antennal segment one with a few erect black setae on interior surface, segments two, three, and four densely covered with reclining simple setae with semierect pale simple setae regularly interspersed; tibiae with several rows of minute black spicules and a few short, semierect, spines.

Head transverse in dorsal view, elongate dorsoventrally in lateral view, height below eyes about one-half height of eye; vertex and frons almost vertical in orientation, nearly flat, posterior margin of vertex finely carinate, weakly elevated above level of eyes in frontal view, forming a more or less smooth curve with posterior margin of eyes in dorsal view (fig. 166); anterior margin of eyes nearly straight, only weakly sinuous at point of antennal insertion (fig. 168); face below eyes in frontal view smoothly rounded, nearly semicircular, forming a fine ridge from ventral margin of eyes to point just posterior to apex of tylus (fig. 168); jugae weakly protuberant; buccal cavity nearly circular; genae slightly concave; gula obsolete; labium reaching to about posterior margin of mesosternum (obscured in all available specimens); antennal fossae nearly contiguous with anterior margin of eyes, inserted about one-third distance above ventral margin of eyes (fig. 168); antennal segment one about as long as width of face between eyes, more or less cylindrical, segment two long, weakly enlarged and tapered slightly proximally, segments three and four very slender, subequal in diameter and length, combined length about equal to length of segment two; anterior margin of pronotum rounded and smoothly flowing into straight and angled lateral margins, posterolateral angles sharply rounded, posterior margin very weakly excavated across mesoscutum; anterior and posterior lobes of pronotum not differentiated, calli indistinct, pronotum weakly rounded transversely, weakly sloping and elevated posteriorly; mesoscutum broadly exposed, only weakly elevated, separated from scutellum by a finely impressed sinuous line; scutellum very weakly tumid, weakly depressed mesially just posterior to mesoscutum, flattened posteriorly; hemelytra with lateral margins only weakly sinuous and not reflexed ventrally (fig. 166); cuneal fracture nearly perpendicular to lateral margin, cuneal incisure relatively deep; outer margin of veins of membrane angulate; pro- and meso-femora somewhat elongate rectangular, more or less parallel-sided, metafemora slightly enlarged with dorsal margin weakly curving; protibiae increasing slightly in diameter distally, mesotibiae cylindrical, metatibiae flattened laterally, tapering from greatest width just distad of tibiofemoral articulation toward tarsus; all tibiae with several rows of fine black spicules.

MALE GENITALIA: Figures 172–174. Vesica more or less J-shaped in outline, without a median spine on the shaft; phallotheca more or less straight, not strongly angulate; left paramere with a greatly reduced anterior process and a greatly elongated posterior process.

FEMALE: Macropterous. Basic coloration, surface texture, vestiture, and structure as in male, except eyes somewhat smaller and vertex relatively wider.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence at Fort de Kock, Sumatra.

DISTRIBUTION: Figure 125. Sumatra.

HOLOTYPE ♂: INDONESIA: *Sumatra:* Fort de Kock, 920 m., 1926, under sheaths of *Bambusa* spec. div., E. Jacobson collector; deposited in the Rijksmuseum van Natuurlijke Historie, Leiden.

PARATYPES: Same data as holotype (AMNH, Leiden), 2♂♂, 4♀♀.

Pilophorus lucidus Linnavuori

Pilophorus lucidus Linnavuori, 1962, pp. 171–172.

DISCUSSION: Described from two male specimens from Kyushu, Japan. Linnavuori (1962) compared this species with *P. pullulus* Poppius (=*P. typicus* Distant) and *P. formosanus* and provided a drawing of the head and thorax. I have not examined specimens of *lucidus.*

Pilophorus miyamotoi Linnavuori

Pilophorus miyamotoi Linnavuori, 1961, pp. 165–167.

DISCUSSION: Linnavuori (1961) described *P. miyamotoi* from Kyushu and compared it with *P. perplexus* (Douglas and Scott), *P. pusillus* Reuter, *P. sinuaticollis* Reuter, and *P. setulosus* Horvath. He provided no illustrations. I have not examined specimens of this species.

Pilophorus niger Poppius

Figure 167

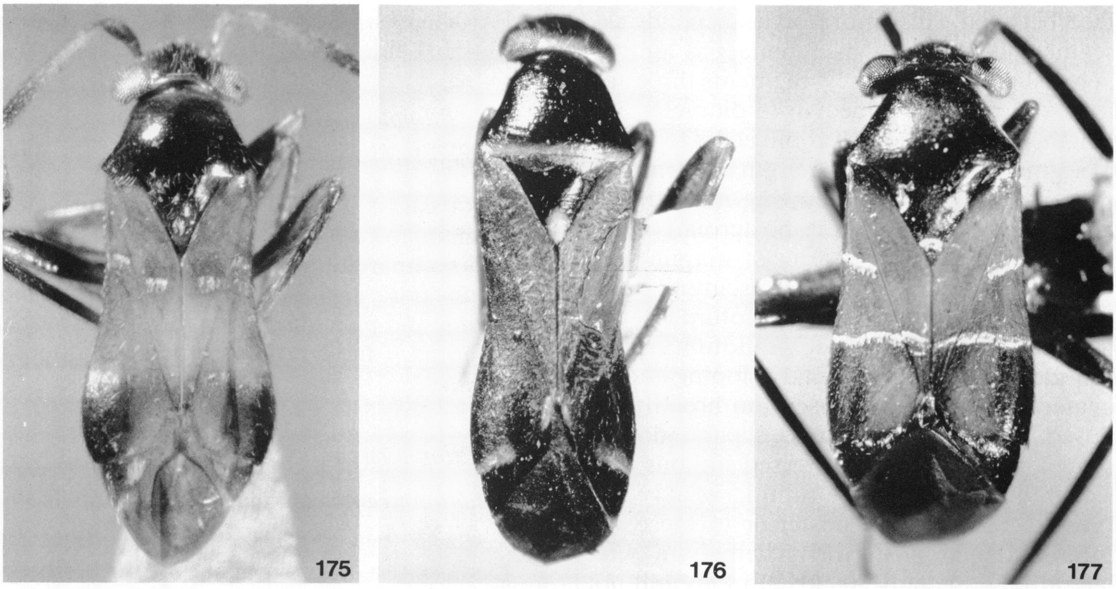
Pilophorus niger Poppius, 1914b, p. 247.

DIAGNOSIS: Recognized by its relatively large size (length apex tylus-cuneal fracture 3.45, width pronotum 1.36), nearly black head (except along inner margins of eyes), pronotum, and scutellum, the rich, dark chocolate brown corium and clavus, and the pattern of scalelike setae on the dorsum with patches laterally on the scutellum, a short transverse band on the corium just posterior to the apex of the scutellum, a complete transverse band anterior to the apex of the clavus, and a small patch at the inner margin of the cuneus (fig. 167). Only female specimens are known at the present time.

MEASUREMENTS: See Appendix.

DISTRIBUTION: West Hupeh, China; Honshu, Japan.

SPECIMENS EXAMINED: PEOPLE'S REPUBLIC OF CHINA: *West Hupeh Prov:* Lichuan District, Suisapa, 1000 m., August 21, 1948, ex *Metasequoia glyptostroboides* (Gressitt and Djou; CAS), 2♀♀. JAPAN: *Hon-*



FIGS. 175–177. *Pilophorus* spp. 175. *P.* near *pulcher,* ♂ (no locality data). 176. *P. samoanus,* ♂, Samoa, Upolu, Afiamalu. 177. *Pilophorus setulosus,* ♂, Yokahama.

shu: Yokahama (Sauter; Helsinki), 1♀ (holotype).

Pilophorus okamotoi Miyamoto and Lee

Pilophorus okamotoi Miyamoto and Lee, 1966, pp. 379–380.

DISCUSSION: Described from the Cheju Islands and Korea with illustrations of the male genitalia which show some similarities in the spine on the vesical shaft to material I have identified as *setulosus.* Compared with *P. lucidus* Linnavuori and *P. setulosus* Horvath by Miyamoto and Lee (1966). I have not examined specimens of this species.

Pilophorus pulcher (Henry)
Figures 175, 178–184

Thaumaturgus pulcher Henry, 1931, p. 115.

DIAGNOSIS: Recognized by the brown head, pronotum, scutellum, and posterior one-fourth of corium; apex of clavus, entire cuneus, and membrane of coloration similar to that found in *formosanus,* hemelytra with an offset but complete band of scalelike setae anteriorly (fig. 175), a complete band posteriorly, and patches laterally and apically on scutellum; vesica with characteristic bifid spine on shaft and a lobular process subapically.

MALE GENITALIA: Figures 181–184.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

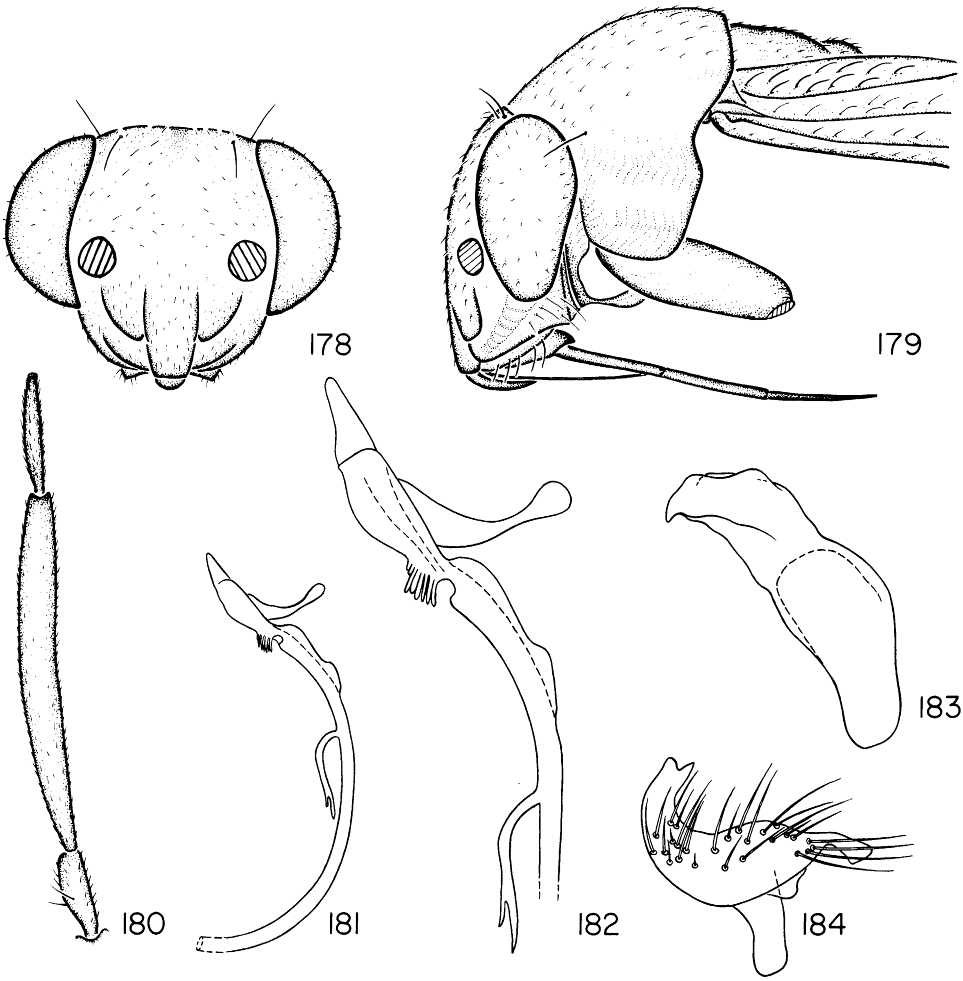
DISTRIBUTION: Sri Lanka.

SPECIMEN EXAMINED: SRI LANKA: Colombo (BMNH), 1♂ (holotype).

Pilophorus samoanus Knight
Figures 128, 176, 185–191

Pilophorus samoanus Knight, 1935, p. 209.

DIAGNOSIS: Recognized as a pilophorine by the form of the male genitalia, especially the vesica, with its simple C-shaped shaft and the secondary gonopore subtended by a cluster of spicules. The pronotum is inflated with the lateral margins strongly rounded and the entire dorsal surface is transversely rugulose. The posterior margin of the pronotum and corium along the cuneal fracture, and the apex of the scutellum and the cuneus are ivory colored, in conspicuous contrast to the castaneous ground color. The parempodia being setiform are apparently unique in the Pilophorini. According to Knight (1935) there is "an arcuate, silvery, sericeous band across embolium and corium opposite tip of scu-



FIGS. 178–184. *Pilophorus pulcher.* 178. Frontal view of head, holotype. 179. Lateral view of head and prothorax, holotype. 180. Antenna. 181. Vesica. 182. Detail of vesica. 183. Phallotheca. 184. Left paramere.

tellum, curving posteriorly for a short distance along inner edge of corium; as a continuation of this silvery band there is a longitudinal stripe along outer edge of clavus, extending from a point opposite tip of scutellum to near apex of clavus; apical area of corium and embolium destitute of silvery bands."

MALE GENITALIA: Figures 189–191. Vesica without median spine or barb; phallotheca nearly straight; left paramere not splayed out, with a short anterior lobe and an elevated elongate posterior lobe.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

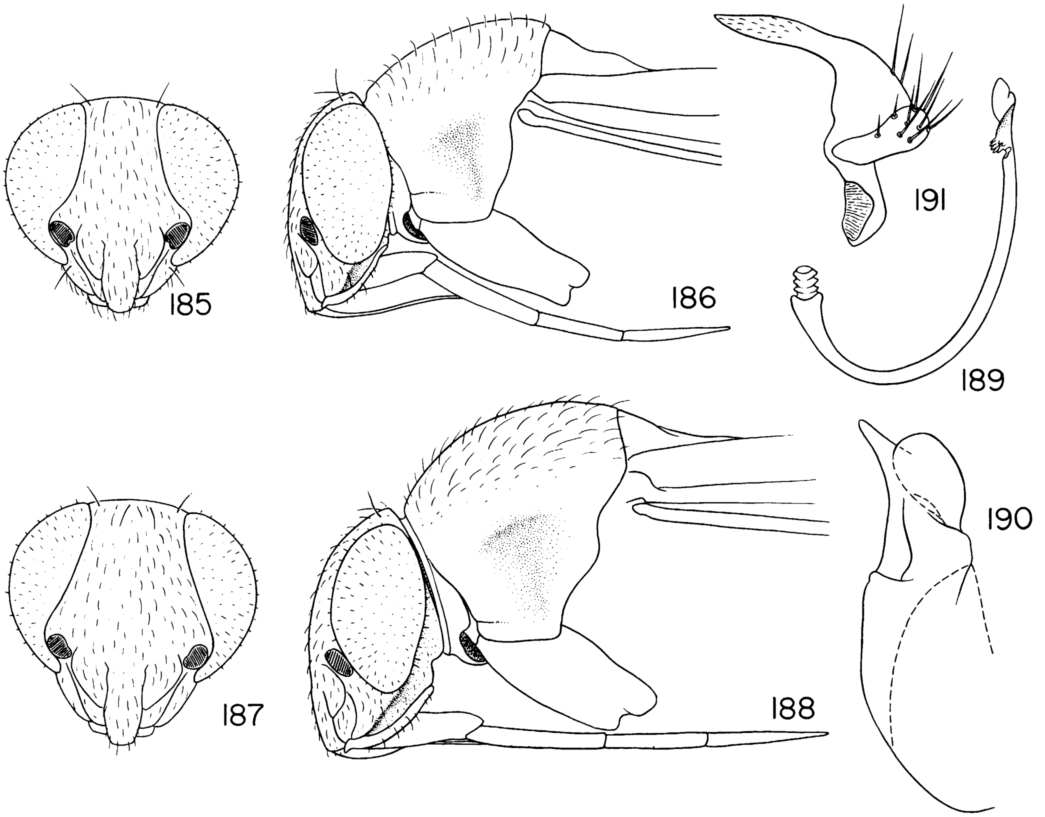
DISTRIBUTION: Figure 128. Samoa.

SPECIMENS EXAMINED: WESTERN SAMOA: *Upolu:* Afiamalu, 2200 feet, July 2, 1940, beating dead branches (Zimmerman; Bishop), 1♀; 2200 feet, July 10, 1940, *Homalanthus* (Swezey; Bishop), 1♂.

Pilophorus setulosus Horvath
Figures 128, 177, 192–198

Pilophorus setulosus Horvath, 1905, p. 421; Linnavuori, 1962, pp. 269–270.

DIAGNOSIS: Recognized by the castaneous head, pronotum, scutellum, cuneus, posterior one-third of exocorium, apex of clavus, ap-



FIGS. 185–191. *Pilophorus samoanus*. 185. Frontal view of head, ♂. 186. Lateral view of head and prothorax, ♂. 187. Frontal view of head, ♀. 188. Lateral view of head and prothorax, ♀. 189. Vesica. 190. Phallotheca. 191. Left paramere.

pendages generally, the ochraceous to light brownish endocorium and anterior three-fourths of the clavus, the relatively large size (length apex tylus-cuneal fracture 2.87, width pronotum 1.26), the present of scalelike, sericeous setae across the anterior margin of the cuneus, and the form of the male genitalia, especially the larger, flattened trifid spicule on the vesical shaft.

MALE GENITALIA: Figures 196–198.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 128. Bonin Islands; Hokkaido, Honshu, Japan.

SPECIMENS EXAMINED: BONIN ISLANDS: *Ani Jima:* N end, July 11, 1949 (Mead; Bishop), 1♂. *Chichi Jima:* Sakai Ura, July 4, 1949 (Mead; Bishop), 1♂. JAPAN: *Hokkaido:* Sapporo (Matsumura; Budapest), 2♀♀ (including holotype). *Honshu:* Yokahama (Illingworth; AMNH, Bishop), 3♂♂, 7♀♀.

DISCUSSION: Also recorded by Linnavuori (1962) from Kyushu, Japan.

Pilophorus sumatranus Poppius

Figures 125, 199

Pilophorus sumatranus Poppius, 1914c, p. 241.

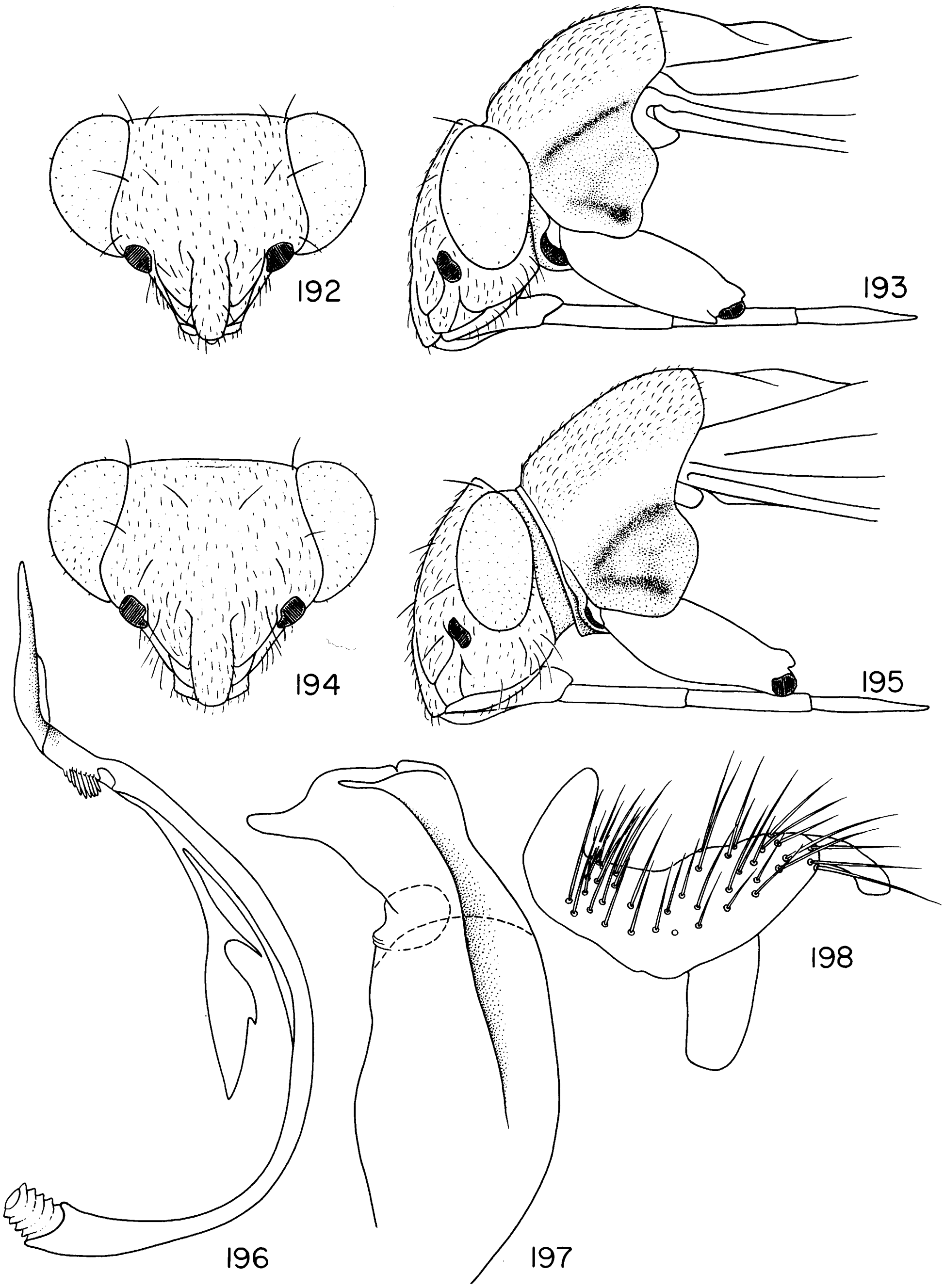
DIAGNOSIS: Recognized by the castaneous to nearly black coloration, with antennal segment three being unicolorous castaneous, the baseball-bat-shaped second antennal segment, the face broadly rounded below the eyes in frontal view, the scutellum with lateral and apical patches of only minute scalelike setae, and the apparently complete anterior transverse band of sericeous scalelike setae.

MALE: Unknown.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

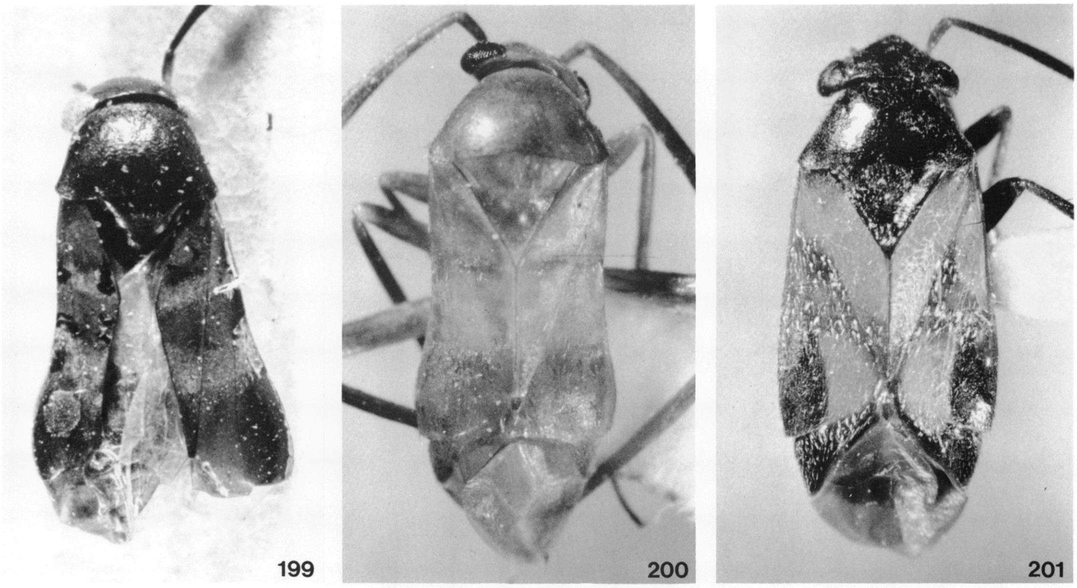
DISTRIBUTION: Figure 125. Sumatra.



FIGS. 192–198. *Pilophorus setulosus.* 192. Frontal view of head, ♂. 193. Lateral view of head and prothorax, ♂. 194. Frontal view of head, ♀. 195. Lateral view of head (exserted) and prothorax, ♀. 196. Vesica. 197. Phallotheca. 198. Left paramere.

SPECIMEN EXAMINED: INDONESIA: *Sumatra:* Padang, 1890 (Modigliani; Helsinki), 1♀ (holotype).

DISCUSSION: This species is known only from the submacropterous (?) holotype female which the original description indicates



FIGS. 199–201. *Pilophorus* spp. 199. *P. sumatranus,* holotype. 200. *P. torrevillasi,* holotype. 201. *P. yunganensis,* holotype.

is in Genoa, but actually is in the Zoological Museum, Helsinki. The specimen has no legs and the venter is heavily covered with glue. Nonetheless, *sumatranus* appears to be related to the group of species including *alstoni, bakeri,* and *torrevillasi.*

Pilophorus torrevillasi, new species

Figures 125, 200, 216–218

DIAGNOSIS: Recognized as in diagnosis for *alstoni.* Distinguished by its generally yellow-brown coloration, with castaneous second antennal segment and tibiae, and by the form of the male genitalia.

DESCRIPTION: Macropterous male. Moderate-sized, relatively broad-bodied, length apex tylus 2.37, width pronotum 1.01; basic coloration yellow-brown; antennal segment one dorsally, segments two and three entirely, segment four distally, all tibiae, and all tarsal segments three castaneous or mahogany; antennal segment four white proximally; facial carina below eyes and labium reddish.

Surface texture and vestiture very similar to *alstoni.*

Structure as in *alstoni,* although slightly larger; antennal segment one less strongly increasing in diameter distally; posterior margin of pronotum very weakly concave; pro- and meso-tibiae slightly flattened.

MALE GENITALIA: Figures 216–218.

FEMALE: Macropterous. Varying from male as in *alstoni.*

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

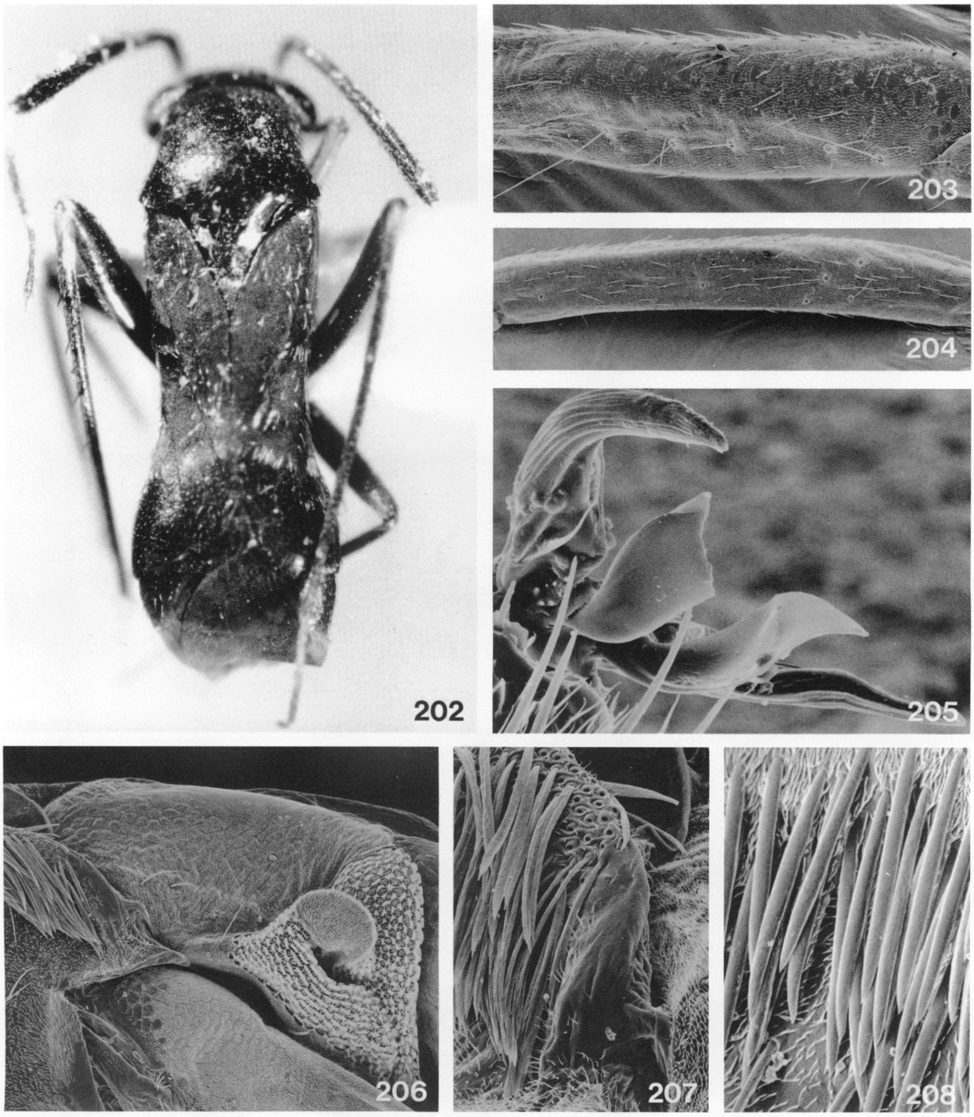
ETYMOLOGY: Named for H. M. Torrevillas.

DISTRIBUTION: Figure 125. Northern Borneo, Malaya, and the Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Rizal Prov., Mt. Montalban, Wa-Wa Dam, 150–200 m., March 6, 1965, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH), 1♂. PHILIPPINE ISLANDS: *Luzon:* Rizal Prov., Montalban Dam, March 16, 1960 (Maa; Bishop), 1♀.

ADDITIONAL SPECIMENS: MALAYSIA: *Malaya:* Pahang, Kuala Tahan, December 15–16, 1958 (Quate; Bishop), 1♂. *Sabah Prov.:* Ranau, September 3–October 5, 1958 (Quate; Bishop), 1♀. PHILIPPINE ISLANDS: *Negros Oriental:* Sibulan, November 30, 1959 (Yoshimoto; Bishop), 1♀.



FIGS. 202–208. *Pilophorus typicus*. 202. Dorsal view, ♂, Philippine Islands, Luzon, Mayoyao. 203. Mesofemur, showing trichobothria. 204. Metafemur, showing trichobothria. 205. Pretarsus. 206. Lateral view of metathorax. 207. Detail of small evaporatory area and scalelike setae. 208. Detail of setae on hemelytra.

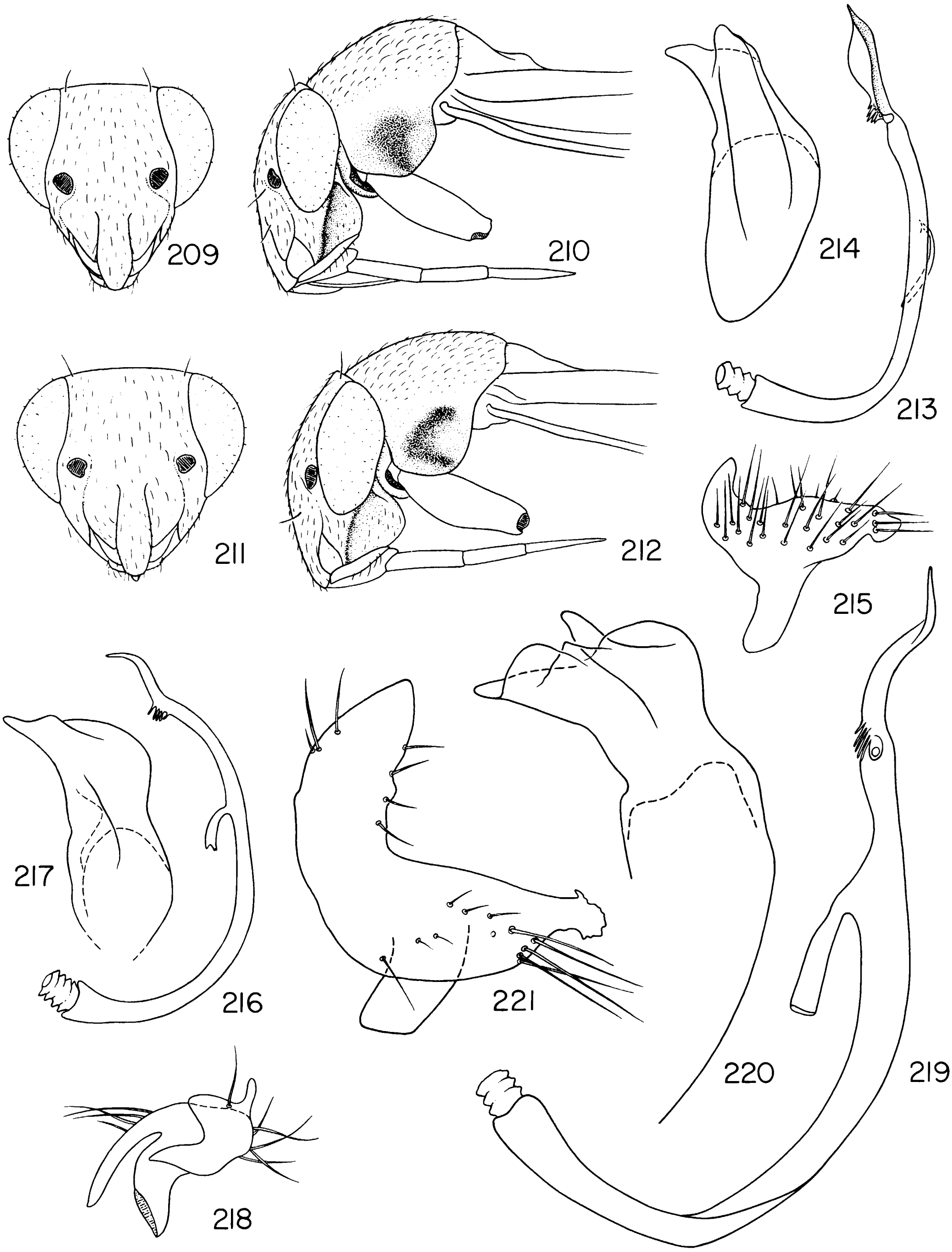
Pilophorus typicus (Distant)

Figures 126, 127, 202–208, 209–215

Thaumaturgus typicus Distant, 1909b, p. 519; Linnavuori, 1962, p. 172.

Pilophorus pulullus Poppius, 1915, p. 64. NEW SYNONYMY.

DIAGNOSIS: Recognized by the elongate, slender, black body which is moderately strongly constricted at the level of the claval commissure, length apex tylus-cuneal fracture 2.14, width pronotum 0.75; the first antennal segment light with a dark stripe dorsomesially, antennal segment two castaneous, antennal segment three white on distal one-third, remainder of segment three and all of segment four castaneous; procoxae white, metacoxae white distally, all trochanters



FIGS. 209–221. *Pilophorus* spp. 209–215. *Pilophorus typicus*. 209. Frontal view of head, ♂. 210. Lateral view of head and prothorax, ♂. 211. Frontal view of head, ♀. 212. Lateral view of head and prothorax, ♀. 213. Vesica. 214. Phallotheca. 215. Left paramere. 216–218. *Pilophorus torrevillasi*. 216. Vesica. 217. Phallotheca. 218. Left paramere. 219–221. *Pilophorus yunganensis*. 219. Vesica. 220. Phallotheca. 221. Left paramere.

white, profemora light, meso- and meta-femora castaneous, tibiae generally castaneous, sometimes lighter distally, genae very weakly keel-like below eyes, gula about as long as length of first antennal segment and vertical, the abdomen very strongly constricted basally, and by the form of the male genitalia in which the spine on the shaft of the vesica is weakly curved and situated under the shaft when vesica positioned as in figure 213. Meso- and meta-femoral trichobothria as in figures 203 and 204, respectively. Metathoracic scent-gland evaporatory area as in figure 206. Pretarsus as in figure 205.

MALE GENITALIA: Figures 213–215.

FEMALE GENITALIA: Posterior wall with bulging area characteristic of Pilophorini.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figures 126 and 127. Japan, south through Taiwan, China, the Philippine Islands, Indochina, Malaysia, much of Indonesia, Sri Lanka and India.

SPECIMENS EXAMINED: CAMBODIA: Ariksatr, E of Mekong River, March 9, 1968 (Hardy; Bishop), 1♀.

CHINA: *Fukien:* Nanching, August 26, 1940 (Maa; Bishop), 1♂; Shaowu, Tachulan, December 1, 1942 (Maa; Bishop), 1♂. *West Hupeh:* Lichuan District, Suisaga, 1000 m., August 19, 1948 (CAS), 1♀; Szechuan-Hupeh Border, Lung-Chii-Pa, July 19, 1948 (CAS), 1♀.

HONG KONG: May 1908 (Terry; BMNH), 1♂; April 1958 (Krauss, Bishop), 1♂; Tai Po Kau, in hills behind Forest Station, June 19, 1964 (Voss; Bishop), 1♀.

INDIA: Assam, Chabua, March 19, 1944 (Hardy; USNM), 1♂; Kamataka, Bangalore, Bannerghatta, October 27–31, 1977, *ca.* 900 m. (Copenhagen), 1♀; Tarikere area, *ca.* 900 m., November 12–17, 1977 (Copenhagen), 1♀.

INDONESIA: *Irian Jaya:* Vogelkop: Danowaria, June 2, 1959 (Gressitt; Bishop), 1♂; Fak Fak, S coast of Bomberai, 10–100 m., April 11, 1959, ex Malvaceae (Gressitt; Bishop), 1♂. *Java:* Bogor: Cultuurtuin, 250 m., September 20, 1953 (Leiden), 3♂♂, 2♀♀; Cultuurtuin, 250 m., June 24, 1955 (van der Vecht; Leiden), 1♂; Kp. Sawah, 30 m., May 1954 (van der Vecht; Leiden), 1♀; Kotabatu, 30 m., June 25, 1954 (van der Vecht; Leiden), 1♂; Kreteg, April 22, 1955 (van der Vecht; Leiden), 1♂; Pabuaran, May 2, 1954 (van der Vecht; Leiden), 2♂♂; Pantjassan, 270 m., June 20, 1954 (van der Vecht; Leiden), 1♀; Tegallega, 250 m., June 26, 1954 (van der Vecht; Leiden), 1♀; Tjikaret, September 20, 1953 (van der Vecht; Leiden), 1♂; Buitenzorg (Muir; CAS), 1♀; Pekalongaw (Muir; CAS), 1♀. *Sumatra:* Anei Kloof, west coast, 500 m., 1925 (Jacobsen; Leiden), 1♀; Fort de Kock, 920 m., 1925–1926 (Jacobsen; Leiden), 1♀.

JAPAN: *Kyushu:* Kagoshima, June 1958 (Krauss; Bishop), 3♂♂; Fukuoka Prefectura, Hikogan Biological Station, September 8, 1966 (Ashlock; Bishop), 1♀; Noma, Tanegashima, June 1958 (Krauss; Bishop). 1♀.

MACAO: August 1906 (Muir; CAS), 1♀.

MALAYSIA: *Malaya:* Fraser's Hill, 1300 m., March 16, 1966, light trap (Sedlacek; Bishop), 1♂; near Kuala Lumpur, September 9, 1958 (Gressitt; Bishop), 1♂; west coast, Langkawi Island, April 22, 1928 (BMNH), 1♀. *Sabah:* West Coast Residency, Ranau, September 30–October 5, 1958 (Maa; Bishop), 4♂♂; Ranau, 8 mi. N of Paring Hot Springs, 500 m., October 8–11, 1958, sweeping (Maa; Bishop), 1♂; Tenompok E of Jesselton, February 13, 1959, light trap (J. and M. Sedlacek; Bishop), 1♂. *Sarawak:* Bau, Lake Area, August 29–30, 1958 (Maa; Bishop), 1♀; Sadong, Kampong Tapuh, 300–450 m., July 4–9, 1958 (Maa; Bishop), 1♂; June–September 1958 (Maa; Bishop), 1♂.

PHILIPPINE ISLANDS: *Luzon:* Albay Prov., Libon, Caguscos, 200 m., May 9–21, 1965 (Torrevillas; Bishop), 2♂♂, 2♀♀; Camarines Sur: Mt. Isarog, 600 m., September 20, 1964 (Delfinado; Bishop), 1♂; Mt. Isarog, Fili, 700–900 m., April 22–25, 1965 (Torrevillas; Bishop), 1♂, 1♀; Manila, August 26, 1945 (Milliron; Bishop), 1♂; August 1923 (McGregor; Berkeley), 1♀; Misamis Oriental, Dinahwihan Gingoog, 26 km. E of Gingoog City, 100–300 m., August 12, 1965 (Torrevillas; Bishop), 1♂; Pigitibiran, May 1, 1961 (Torrevillas; Bishop), 1♂; Mountain Prov., Abatan, Buguias, 60 km. S of Bontoc, 1800–2000 m., April 5–June 19, 1964 (Torrevillas; AMNH, Bishop), 36♂♂, 18♀♀; Mayoyao, Ifugao, 1200–1500 m., July 9–September 19, 1966 (Torrevillas; AMNH, Bishop), 33♂♂, 29♀♀; Jacmal Bunhian, 24 km. E of Mayoyao, 800–1000 m., May 1–13, 1967 (Torrevillas; Bishop), 1♀; Rizal Prov., Mt. Montalban, Wa-Wa Dam, 150–200 m., February 28–March 23, 1965 (Torrevillas; Bishop), 4♂♂. *Mindanao:* Agusan, San Francisco, 10 km. SE, November 17, 1959 (Yoshimoto; Bishop), 1♂;

Zamboanga del Norte, Manucan, 8 km. S, 420 m., December 12, 1959 (Yoshimoto; Bishop), 1♀. *Palawan:* Mantalingajan, Pinigisan, 600 m., September 4–7, 1961 (Noona Dan; Copenhagen), 1♂, 1♀; 3 km. NE Tinabog, May 8, 1962, virgin forest (Holtman; Bishop), 1♂.

RYUKYU ISLANDS: *Okinawa:* Iwa, July–September 1945 (Parsons and Winnup; Bishop), 1♂, 1♀; July 22, 1945 (Field; USNM), 2♀♀.

SRI LANKA: *Central Prov.:* Maskeliya Oya, 6 mi. SW of Hatton, March 18, 1962, swept on shrubs at river (Brinck, Andersson, Cederholm; Lund), 1♂; Paradeniya, 5 mi. SW of Kandy, March 15, 1962 (Brinck, Andersson, Cederholm; Lund), 1♂, 1♀. *Eastern Prov.:* Madura Oya, 15 mi. NNW of Bibile, March 13, 1962, swept on dry vegetation by stream (Brinck, Andersson, Cederholm; Lund), 1♂. *Sabarangamuwa Prov.:* Hatherleigh, 1 mi. S of Rakwana at 1700 feet, February 28, 1962, swept on dry grassland (Brinck, Andersson, Cederholm; Lund), 1♂; Kitugala, 21 mi. N of Ratnapura, March 17, 1962 (Brinck, Andersson, Cederholm; Lund), 1♂, 2♀♀. *Uva Prov.:* Kudu Oya, river 15 mi. S of Wellawaya, March 22, 1962 (Brinck, Andersson, Cederholm), 1♂, 1♀; Gampha Estate, 9 mi. W of Badulla, March 14, 1962, swept on moist grassland (Brinck, Andersson, Cederholm; Lund), 1♀; Beauvais, 5 mi. WNW of Haputale, 4500 feet, March 3, 1962, tea plantation (Brinck, Andersson, Cederholm; Lund), 1♀. *Western Prov.:* Yakkala, 18 mi. NE of Colombo, January 14–31, 1962 (Brinck, Andersson, Cederholm; Lund), 1♀.

TAIWAN: Alishan, Chiayi Hsien, 2400 m., June 12–16, 1965 (Maa and Lin; Bishop), 1♂; Kuraru, Hengchun Park, 250 m., April 2, 1965 (Yoshimoto; Bishop), 1♂; Kwantzeling, Tainan Hsien, 250 m., April 6–7, 1965 (Yoshimoto; Bishop), 3♀♀; Liukuei, Kaohsiung, Hsien, March–April 1964 (Maa; Bishop), 1♀; Musha, December 5, 1963 (Maa; Bishop), 1♂, 1♀; Taipei, October 11, 1967 (Maa; Bishop), 1♂; Taipei, July 4–8, 195? (Lin; Bishop), 1♂; Tainan, April 7 (Sauter; Helsinki), 1♂, 1♀; Sun-moon Lake, May 1958 (Krauss; Bishop), 2♂♂; Tsaoshan (Sozan), 200–300 m., August 4–5, 1963 (Gressitt and Maa; Bishop), 1♀; Tung-Pu near Poli, December 8, 1963 (Maa; Bishop), 1♀.

THAILAND: *Chiangmai Prov.:* Chiangdao, April 5–11, 1958, 450 m. (Maa; Bishop), 4♂♂, 1♀; Chiangdao, June 15, 1965 (Ashlock; Bishop), 1♂, 1♀; Doi Suthep, 1000 m., June 12, 1965 (Morimoto; Bishop), 1♂; Fang, April 12–19, 1958 (Maa; Bishop), 1♂; Fang, 500 m., June 13, 1965 (Morimoto; Bishop), 2♂♂; Fang, Agr. Exp. Station, 600 m., June 14, 1965 (Morimoto; Bishop), 3♂♂, 2♀♀. *Trang Prov.:* Khaophappha Khaochang, 300–400 m., 3–25 January 1964 (Samuelson; Bishop), 2♂♂, 1♀. [*Prov. unknown*]: Banna, April 5–10, 1958 (Maa; Bishop), 1♂; Prew, Chanthaburi, April 25, 1958 (Maa; Bishop), 2♂♂.

VIET NAM: Ap Hung-Lam, 21 km. NW of Dilinh, 1100 m., September 29–October 5, 1960 (Yoshimoto; Bishop), 1♂; Dak Song, 70 km. SW of Ban Me Thout, 870 m., May 19–21, 1960 (Quate; Bishop), 1♂; Karyu Dariar, 200 m., February 13–28, 1961 (Spencer; Bishop), 1♂; Mt. Lang Bian, 1500–2000 m., May 19–June 8, 1961 (Spencer; Bishop), 1♂.

DISCUSSION: Comparison of *Thaumaturgus* (=*Pilophorus*) *typicus* Distant in the British Museum (Natural History) and the holotype ♀ of *Pilophorus pulullus* Poppius in the Academie der Landwirtschaftwissenschaften (Deutsches Entomologisches Institut), along with many other specimens indicates that the two names apply to one very widespread taxon. The Distant name has priority and thus *pulullus* Poppius becomes a junior synonym.

Pilophorus yunganensis, new species

Figures 125, 201, 219–221

DIAGNOSIS: Recognized by its relatively large size and stout body, the nearly black and yellow-brown coloration of the dorsum, the somewhat scattered distribution of the sericeous scalelike setae on the hemelytra, and the form of the male genitalia with the large median spine on the vesical shaft and the complex elaboration on the dorsal surface of the phallotheca.

DESCRIPTION: Macropterous female. Body form broad, weakly ovoid, length apex tylus-cuneal fraction 3.17, width pronotum 1.41; head, pronotum scutellum posterior half of exocorium, and cuneus, thoracic pleura, abdomen, and all femora, distal half of antennal segment two, procoxae and all third tarsal segments deep castaneous to nearly black; anterior half of exocorium, entire endocorium and most of clavus yellow-brown; clavus heavily infuscate posteriorly; membrane deep brown; antennal segment one, proximal half of antennal segment two, meso- and metacoxae, tibiae, and tarsal segments two and three dirty yellowish; labium dark basally, light apically; scent gland orifice mostly light in color.

Body surface generally smooth, head, pronotum, and scutellum moderately shining, hemelytra generally dull, thoracic and abdominal venter highly polished; body generally covered with recument, pale to light brown, rather short simple setae; sericeous scalelike setae in the form of patches anterolaterally and posteriorly on scutellum, scattered as an angled transverse row on corium just posterior to the level of apex of scutellum, scattered as a complete transverse band across corium and clavus just anterior to apex of clavus (fig. 201), scattered across anterior margin of cuneus, on posterior margins of mesepimeron and metepisternum, and on abdominal sterna three, four, and five; most of clavus and posterior one-third of endocorium with subappressed, golden, woolly setae; antennal segment one with a few erect black spines on interior surface, segment two with short, neat subappressed vestiture, segments three and four (missing in holotype) with neat reclining vestiture and a few longer semierect fine setae; protibiae with a few, reclining short, black spines, mostly on lateroventral surface, meso- and meta-tibiae with more numerous, heavy, black suberect spines about as long as tibial diameter and mostly on lateroventral surfaces; pro- and meso-tibiae with a row of minute black spicules on dorsal and ventral surfaces, metatibiae with several rows.

Head more or less transverse in dorsal view, frons and clypeus projecting anteriorly noticeably beyond anterior margin of eyes by distance almost equal to dorsal length of an eye (fig. 201); height of head below eyes slightly less than half the height of an eye; head posteriorly more or less conforming to anterior margin of pronotum; posterior margin of vertex nearly straight in dorsal and frontal views, in the form of a sharply rounded carina, vertex slightly depressed just mesad of mesial margin of eyes and just anterior to posterior margin of vertex; bucculae narrow, buccal cavity ovoid, jugae not protuberant, genae distinctly convex, gula short, inclined, labium reaching to posterior margin of mesocoxae; antennae inserted at ventral margin of eyes, fossae slightly removed from eyes, mesial margin of eyes sinuous; antennal segment one more or less cylindrical, not noticeably enlarged, segment two nearly cylindrical, increasing slightly in diameter distally, segments three and four about one-half minimum diameter of segment two, subequal in diameter, total length about equal to length of segment two; pronotum trapezoidal in outline, lateral margins nearly straight, posterior margin very weakly concave, rather strongly rounded transversely, slightly humped longitudinally, anterior and posterior lobes not demarcated, calli weak, pronotum with a weak pitlike impression on either side of midline slightly behind anterior margin; mesoscutum rather broadly exposed, slightly elevated, steeply inclined laterally, depressed mesially, separated from scutellum by a finely impressed line; scutellum flat at level of clavus laterally and posteriorly, central portion weakly swollen; hemelytra broad, appearing flattened, lateral margins weakly convex, not sinuous, cuneal fracture weakly angled anteromesially, cuneal incisure shallow, lateral cuneal margin very weakly rounded, posterior margin of outer vein of membrane cells smoothly rounded; all femora somewhat swollen in appearance and distinctly tapering distally; protibiae increasing slightly in diameter distally, mesotibiae nearly cylindrical, metatibiae weakly flattened laterally.

FEMALE GENITALIA: Not examined.

MALE: Macropterous. Basic structure, color, and vestiture as in female, except eyes slightly larger and vertex relatively narrower.

MALE GENITALIA: Figures 219–221. Vesica strongly curved basally, with a heavy median spine (possibly broken in only dissection); phallotheca more or less straight.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality.

DISTRIBUTION: Figure 125. China, Fukien and West Hupeh Province.

HOLOTYPE ♀: PEOPLE'S REPUBLIC OF CHINA: *Fukien Prov.:* Yung An, June 4, 1942, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but also June 2, 1942 (AMNH, Bishop), 1♂, 1♀. PEOPLE'S REPUBLIC OF CHINA: *West Hupeh:* Sui-sa-pa, August 3, 1948 (Gressitt and Djou; Bishop), 1♀.

AURICILLOCORINI, NEW TRIBE

DIAGNOSIS: Recognized by the somber brownish coloration, weak to strong antlike appearance, the pronotum with the anterior margin in the form of a flattened, sometimes weakly reflexed, collar, the cuneal incisure obsolete, the cuneal fracture often at right angles to the corial margin, the cuneus broadly triangular, the metathoracic scent-gland evaporatory area weakly to strongly protruding laterally and with the anterior and posterior evaporatory areas at most slightly overlapping, the weakly fleshy, recurved, apically convergent parempodia, the phyline-type male genitalia, and the phyline-type female genitalia.

TYPE GENUS: *Auricillocoris,* new genus.

AURICILLOCORIS, NEW GENUS

DIAGNOSIS: Recognized by the antlike appearance with contrasting light and dark coloration (fig. 223), the weakly fleshy and apically convergent parempodia (fig. 228), the strongly protruding metathoracic scent-gland evaporatory area (figs. 226, 227), the elongate relatively slender first antennal segment (fig. 223), the obsolete cuneal fracture at right angles to the corial margin (fig. 223), the cuneus broadly triangular, the collar-like weakly reflexed anterior margin of the pronotum, the clavus more or less distinctly elevated along the claval commissure just posterior to the scutellum (fig. 223), the highly polished cuneus strongly contrasting with the surface of the corium (fig. 229), and the form of the male genitalia (figs. 235–242).

DESCRIPTION: Macropterous male. Antlike, medium-sized, dark colored with some contrasting light markings on corium and clavus; body surface generally smooth, head, pronotum, scutellum, and cuneus more or less highly polished, weakly to strongly shining, clavus and corium weakly granular (fig. 229), dull, some areas weakly pruinose; pubescence of dorsum consisting of sparse, short and reclining or longer and suberect simple setae; pronotum apparently lacking erect spine on anterolateral angles; abdomen with rather long, suberect, simple setae; all femora with pale reclining, slender spines intermixed with reclining pale common setae, all of length slightly less than tibial diameter; meso- and meta-femoral trichobothrial pattern as in figures 230–232; all tibiae with several rows of minute spicules.

Head transverse in dorsal view, posterior margin of eyes more or less obscuring anterior margin of pronotum; posterior margin of vertex finely carinate, more or less erect; frons and vertex flat, continuous (figs. 223–225); eyes occupying most of height of head in lateral view (fig. 234), anterior margin distinctly emarginate at antennal insertion (fig. 233); antennae inserted well below midline of eye, fossa contiguous with eye; antennal segment one relatively slender, elongate, coke-bottle-shaped, antennal segment two increasing in diameter distally, greatest diameter more or less equal to that of segment one, diameter of segments three and four subequal, slightly greater than greatest diameter of segment two; jugae weakly protruding, lora slightly recessed, rather short; bucculae narrow, of more or less uniform width, buccal cavity very broadly ovoid; genae about as wide as diameter of antennal segment one, strongly angled mesoventrally; gula obsolete; labium reaching to about apex of mesocoxae; anterior and posterior lobes of pronotum either confluent and not demarcated (figs. 223, 225), or anterior lobe short, slightly narrowed, and more or less straight-sided (fig. 224); anterior pronotal margin weakly transversely convex in dorsal view, in the form of a sunken, rather narrow collar, with a weakly reflexed margin; posterior lobe of pronotum swollen and elevated, lateral and posterior margins weakly convexly rounded, posterior margin completely obscuring mesoscutum in dorsal view; scutellum weakly rounded transversely, sloping and more or less strongly concave longitudinally; lateral hemelytral margin very strongly sinuous, broadly rounded at point of cuneal fracture (figs. 223–225); costal region reflexed ventrally on anterior one-half of corium, exocorium not visible

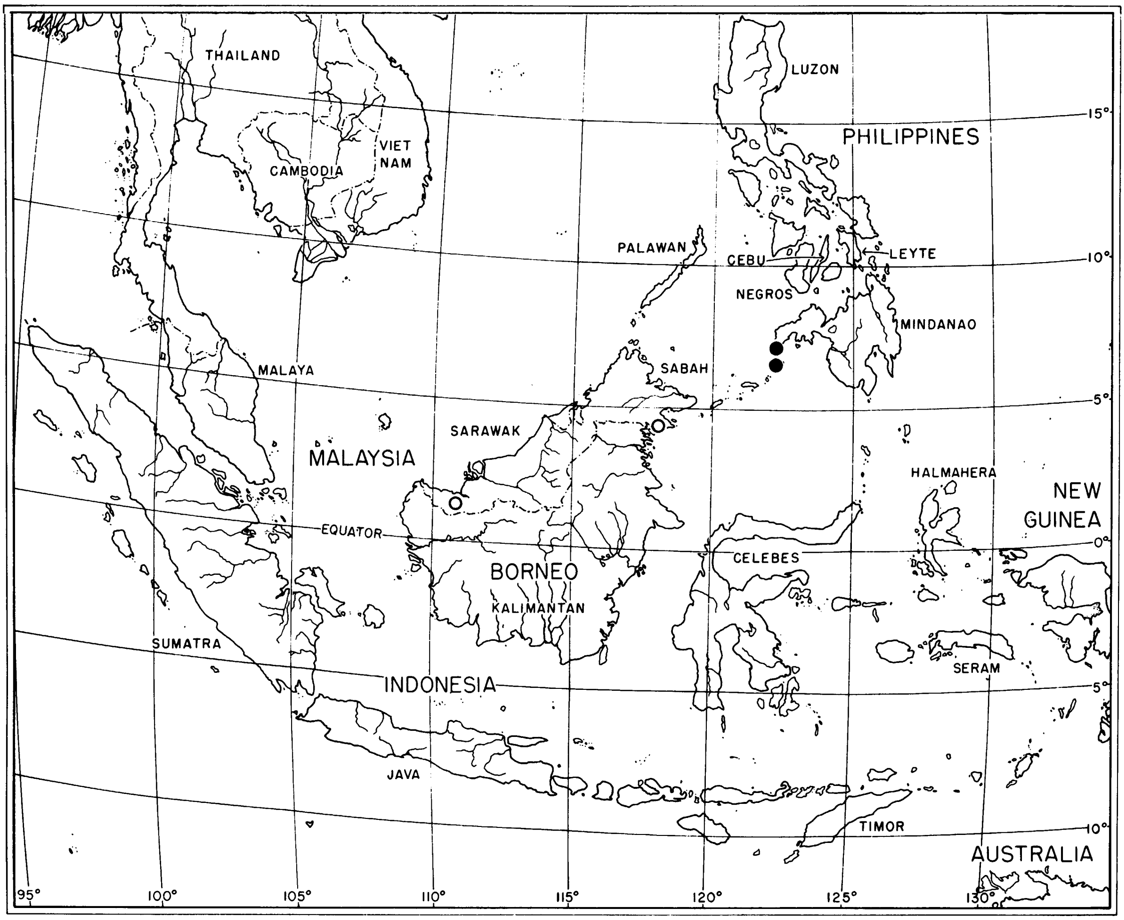

THAILAND
VIET NAM
CAMBODIA
LUZON
PHILIPPINES
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
MALAYA
SABAH
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 222. Distribution of *Auricillocoris* spp. *A. tawauanus* (O); *A. zamboanga* (●); also *A. coonoor* from southern India.

from above; clavus more or less distinctly elevated along claval commissure just posterior to scutellum; cuneal fracture nearly perpendicular to longitudinal axis of body or slightly angled posteromesially (figs. 223–225), cuneal incisure nonexistent; cuneus very broadly triangular, lateral margin rounded; inner margin weakly sinuous, anterior margin straight; small cell of membrane obsolete, larger cell very elongate, vein forming inner margin parallel to mesial margin of cuneus, posteromesial angle rounded; metathoracic scent-gland evaporatory area strongly protruding laterally, anterior portion only very slightly overlapping posterior portion (figs. 226, 227); all femora elongate, slender, weakly cylindrical, metafemora weakly bent (figs. 230, 231); pro- and meso-tibiae cylindrical, metatibiae somewhat flattened, greatest width about one-third distance from femoral articulation; metatarsus sometimes relatively short and stout, tarsal segment three slightly longer than segment two, segment two slightly longer than segment one; claws only moderately broadened basally, smoothly and rather strongly arched distally; pulvilli small; parempodia weakly fleshy, curving, convergent apically (fig. 228).

MALE GENITALIA: Vesica very short, relatively stout, weakly curving, secondary gonopore very large, conspicuous, apex of vesica either membranous (fig. 235) or with a single spine (figs. 238, 241); phallotheca tapering distally, rather smoothly curved on dorsal

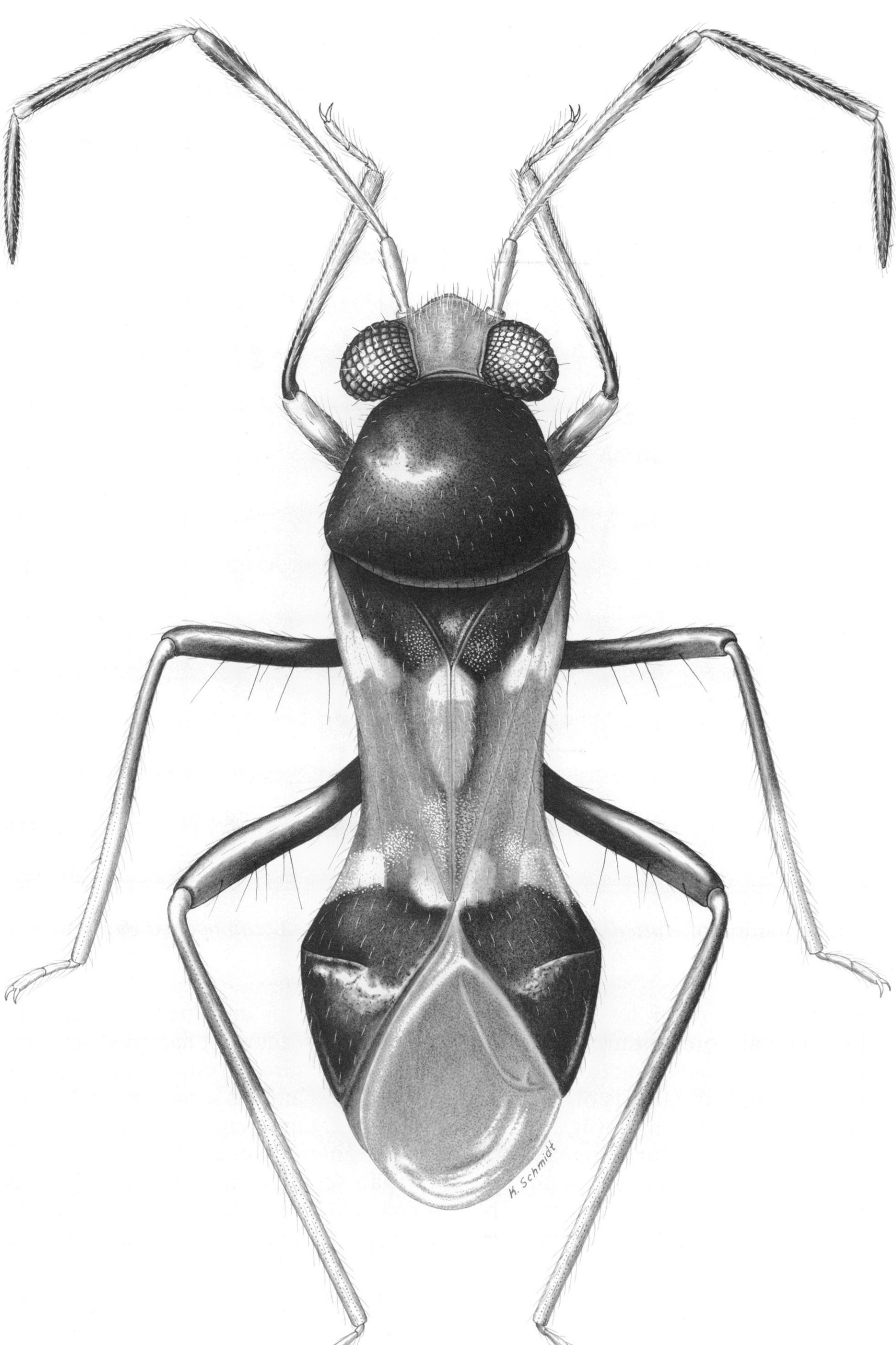
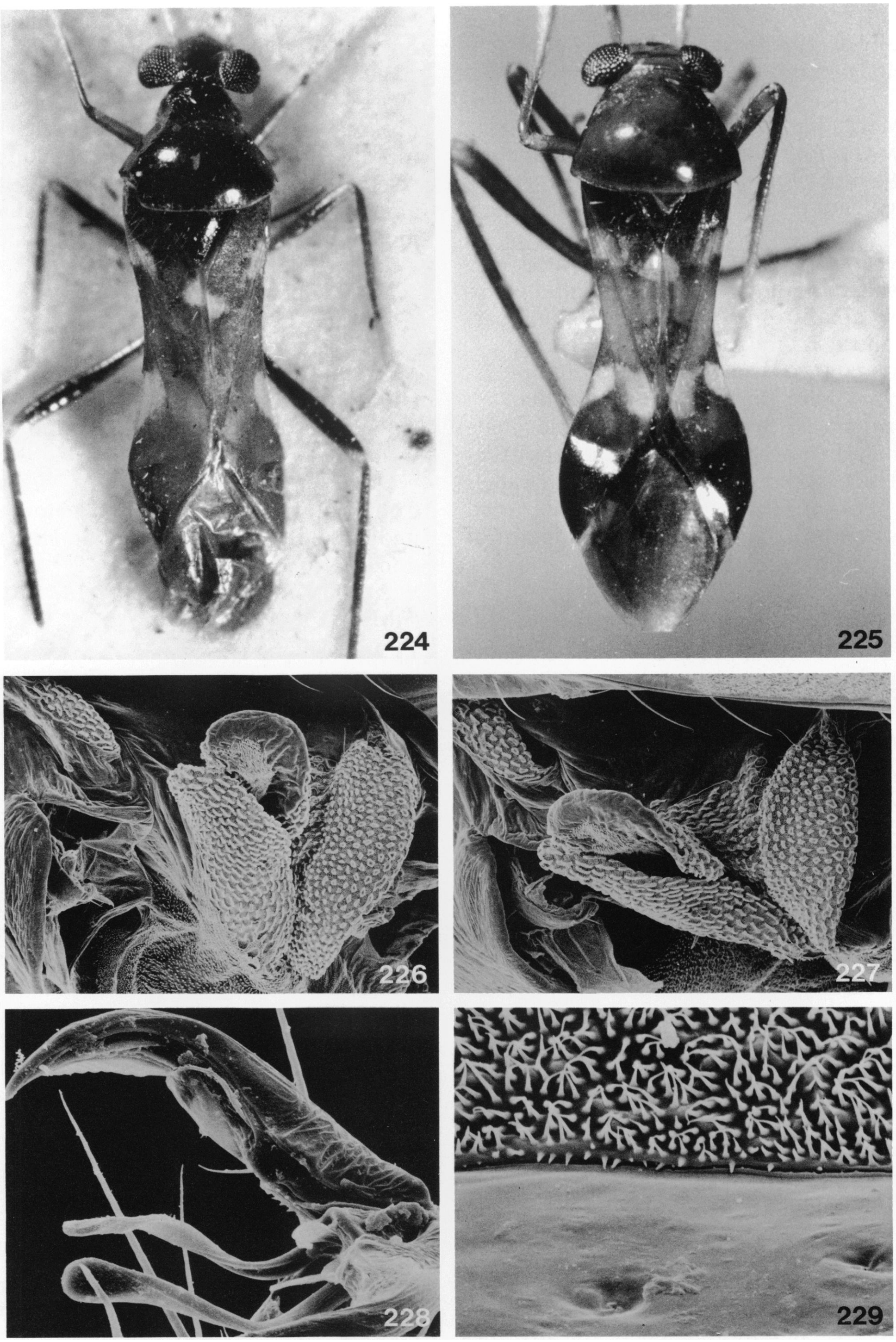


FIG. 223. *Auricillocoris zamboanga.*



FIGS. 224–229. *Auricillocoris* spp. 224. *A. coonoor* (specimen without data). 225. *A. tawauanus*, holotype, 226–229. *A. zamboanga*. 226. Lateral view of metathorax. 227. Posterolateral view of metathorax, showing protruding metathoracic scent-gland evaporatory area. 228. Pretarsus. 229. Cuneal fracture, corium with minute spicules, cuneus polished.

margin (figs. 237, 240, 242); left paramere typically phyline, boat-shaped, posterior process elongate, anterior process short (figs. 236, 239).

FEMALE: See *Auricillocoris zamboanga.*

FEMALE GENITALIA: See *Auricillocoris zamboanga.*

TYPE SPECIES: *Auricillocoris zamboanga,* new species.

ETYMOLOGY: Named for the elevated, earlobe-shaped metathoracic scent-gland evaporatory area; from the Latin, *auricilla,* earlobe, and *coris,* bug; masculine.

DISTRIBUTION: Figure 222. Philippine Islands; northern Borneo; southern India.

ADDITIONAL SPECIMENS: A single male specimen from Coonoor, India (BMNH) resembles *A. coonoor* but has a nearly parallel-sided pronotum and has the clavus raised into a point just anterior to the midpoint of the claval commissure.

Auricillocoris coonoor, new species

Figures 224, 235–237

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the constricted and demarcated anterior lobe of the pronotum (fig. 224), the rather large and broadly exposed scutellum, the moderately long and nearly erect dorsal vestiture, and the form of the male genitalia, in which the vesica is membranous apically (fig. 235).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.53, with pronotum 0.99; general coloration of body and wings castaneous, wings somewhat lighter than body; rather strongly contrasting ivory markings as follows: transverse ovoid mark on clavus just posterior to scutellum, angled mark on corium and encroaching on clavus just anterior to level of above mentioned claval mark, broad mark on exocorium with midpoint at level of apex of clavus, and posterior margin of metepisternum broadly; yellow-white as follows: antennal segment one, antennal segment two except distal one-fourth, most of protibiae, distal one-fourth and fifth respectively of meso- and meta-tibiae, all tarsi, all femora vaguely apically, metacoxae, and all trochanters.

Surface texture as in generic description, cuneus only weakly polished; vestiture moderately long and suberect on dorsum; spicules on tibiae rather broadly spaced.

Vertex relatively broad, posterior margin nearly straight, weakly excavated; anterior pronotal lobe short, but distinct, narrowed, more or less straight-sided; scutellum relatively broad; clavus only weakly elevated along commissure just posterior to scutellum; metafemora only very weakly flattened; tarsi weakly elongate.

MALE GENITALIA: Figures 235–237.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 222. Known only from the type locality.

HOLOTYPE ♂: SOUTH INDIA: *Nilgiri Hills:* Coonoor, T. V. Campbell collector; deposited in the British Museum (Nat. Hist.), London.

ADDITIONAL SPECIMEN: 1♂, no data (BMNH).

Auricillocoris tawauanus, new species

Figures 222, 225, 238–240

DIAGNOSIS: See diagnosis under *zamboanga.*

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.17, width pronotum 0.99; general coloration golden brown, corium and clavus basally, entire cuneus, and membrane castaneous; white contrasting markings as in *zamboanga* except posterior margin of metepisternum also white (fig. 225); all appendages relatively pale, antennal segment two distally and segments three and four, all femora, and all tibiae proximally light to medium brown; pro- and meso-coxae and all trochanters off white.

Surface texture, vestiture, and structure very similar to *zamboanga.*

MALE GENITALIA: Figures 238–240.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality.

DISTRIBUTION: Figure 222. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Tawau, Quoin Hill, July 8–14, 1962, malaise trap, H. Holtman collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPE: MALAYSIA: *Sarawak Prov.:* Tebang, September 5, 1958, at light (Maa; Bishop), 1♂.

Auricillocoris zamboanga, new species

Figures 222, 223, 226–232, 241, 242

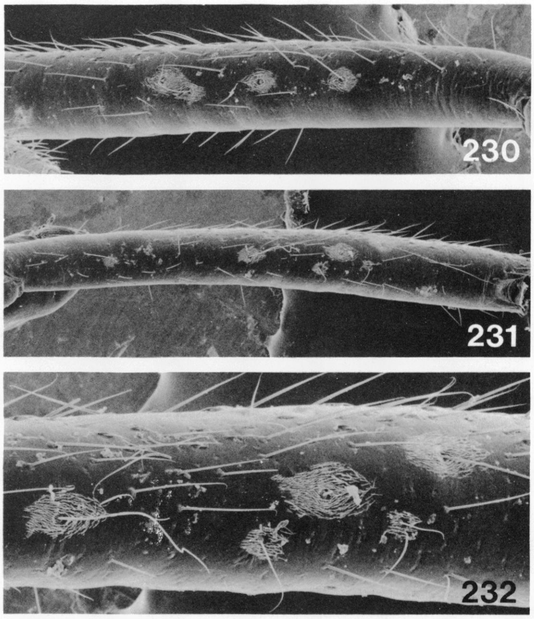
DIAGNOSIS: Recognized, along with *tawauanus,* by the characters in the generic diagnosis, the pronotum with undemarcated anterior and posterior lobes, the distinctly elevated clavus along the anterior portion of the commissure, and the strongly shining cuneus (fig. 223). Distinguished by its generally deep brown to castaneous coloration, whereas *tawauanus* is golden brown with some darker mahogany markings, and the form of the vesica.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.25, width pronotum 0.92; general coloration of body and hemelytra castaneous, median portion of corium somewhat lighter than remainder; rather strongly contrasting yellow-white markings as follows: transverse ovoid mark on clavus just posterior to scutellum, angled mark on corium and encroaching on clavus slightly anterior to above-mentioned claval mark, two round markings adjacent to apex of clavus on corium, an angled pruinose and white marking laterad of the last on exocorium, and protruding portion of metathoracic scent-gland evaporatory area; yellow-white also as follows: antennal segment one entirely, proximal half of antennal segment two, all tibiae distally, and all tarsi; face golden brown ventrally.

Surface texture basically as in generic description, cuneus highly polished and shining; vestiture of dorsum rather short and reclining; tibial spicules closely set.

Vertex relatively narrow, posterior margin distinctly excavated; anterior pronotal lobe not demarcated, confluent with posterior lobe; lateral pronotal margin smoothly rounded from anterolateral to posterolateral angles; scutellum narrow basally, shape narrowly triangular; metafemora distinctly flattened; tarsi rather short and stout.

MALE GENITALIA: Figures 241 and 242.



FIGS. 230–232. *Auricillocoris zamboanga.* 230. Mesofemur, showing trichobothria. 231. Metafemur, showing trichobothria. 232. Detail of metafemur.

FEMALE: Macropterous. Basic coloration, vestiture, and structure similar to male except eyes somewhat smaller, vertex relatively wider and face below eyes relatively longer than in male.

FEMALE GENITALIA: Posterior wall simple.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

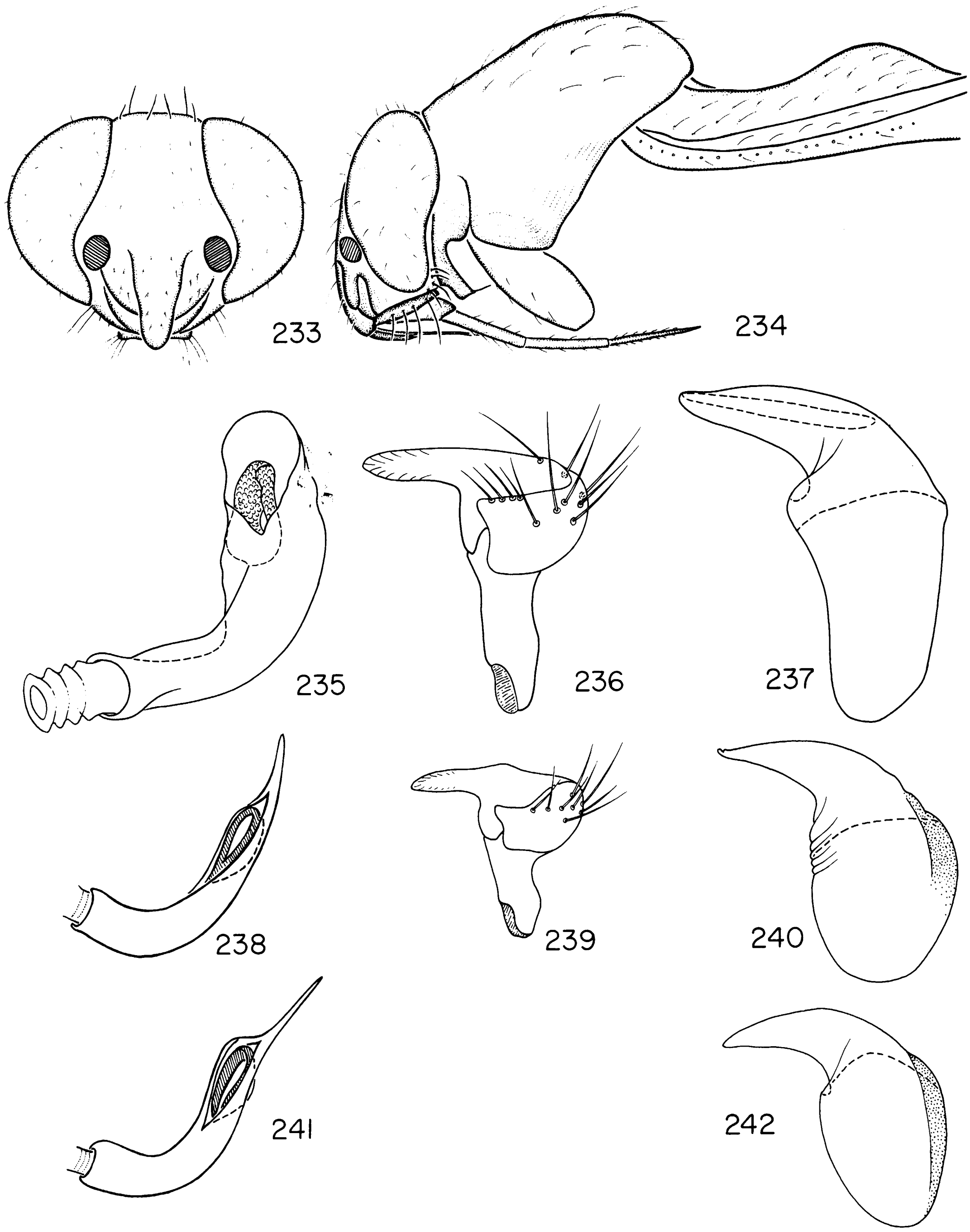
DISTRIBUTION: Figure 222. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Mindanao:* Zamboanga, C. F. Baker collector; deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (Type No. 100409).

PARATYPES: Same data as holotype (AMNH, USNM), 1♂, 3♀♀. PHILIPPINE ISLANDS: *Basilan Island*: C. F. Baker (AMNH, USNM), 2♂♂, 3♀♀.

CLEOTOMIRIS, NEW GENUS

DIAGNOSIS: Recognized by the antlike appearance, the transverse white fascia on the clavus just posterior to the scutellum, the relatively small to moderate size, the weakly fleshy apically convergent parempodia (fig.

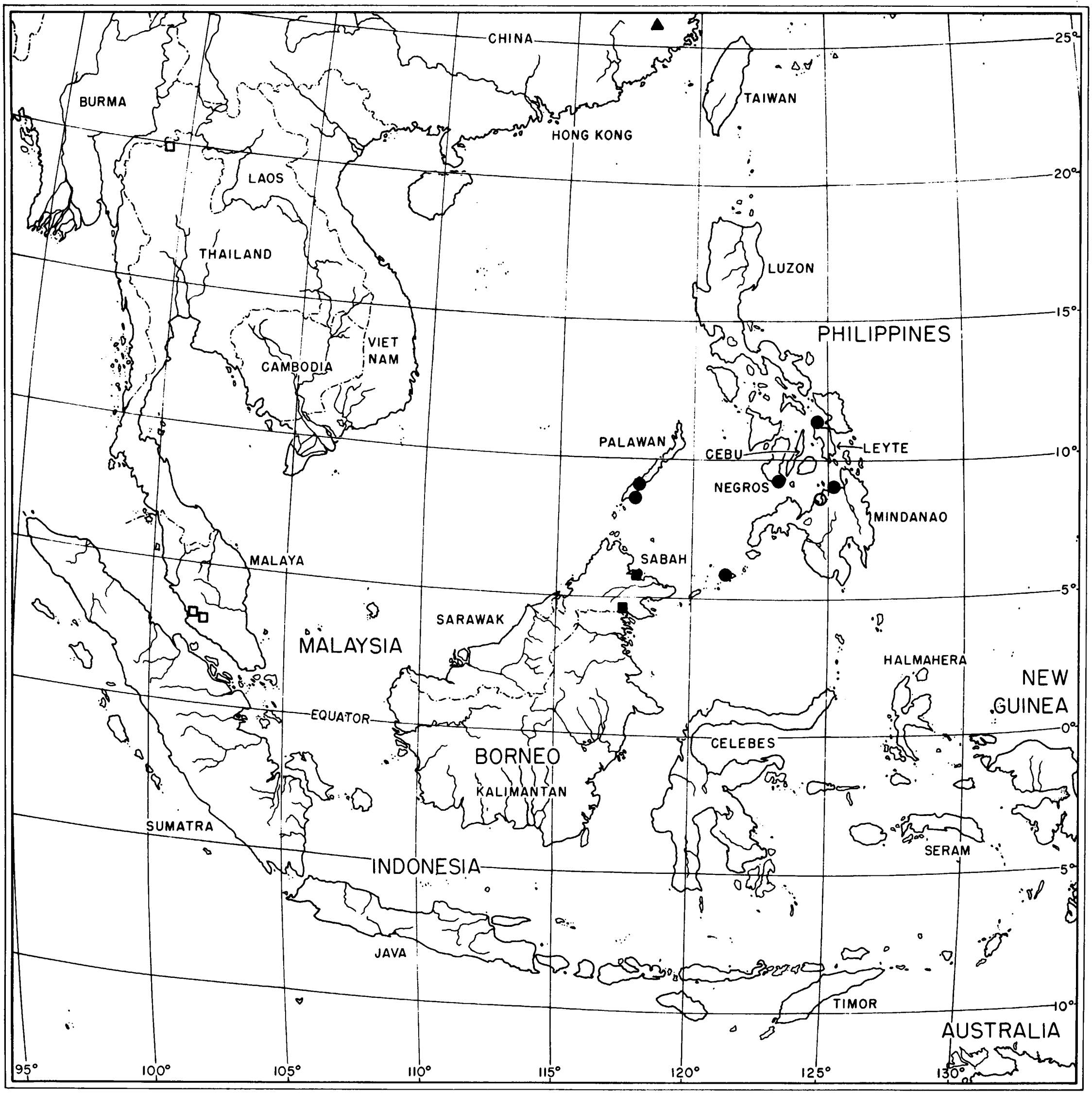


FIGS. 233–242. *Auricillocoris* spp. 233, 234. *A. zamboanga.* 233. Frontal view of head. 234. Lateral view of head and prothorax. 235–237. *A. coonoor.* 235. Vesica. 236. Left paramere. 237. Phallotheca. 238–240. *A. tawauanus.* 238. Vesica. 239. Left paramere. 240. Phallotheca. 241, 242. *A. zamboanga.* 241. Vesica. 242. Phallotheca.

262), the slightly protruding and distinctly constructed metathoracic scent-gland evaporatory area (fig. 261), the broadly collar-like anterior margin of the pronotum (fig. 250), the relatively short first antennal segment, the weakly to strongly terete third and fourth antennal segments, the triangular cuneus, the obsolete cuneal fracture at right angles to the corial margin (figs. 246, 260), and the form of the vesica with its short basal portion terminating in a very large secondary gonopore and apically weakly membranous with a single rather short spine or with a much longer curving spine (figs. 251, 254, 257, and 267).

DESCRIPTION: Macropterous male. Antlike, small to moderate-sized, range length apex tylus-cuneal fracture 1.62–2.61, range width pronotum 0.80–1.12; reddish brown to nearly black, always with a contrasting light transverse marking on clavus just posterior to scutellum; dorsum generally smooth, finely granular, sometimes polished and shining at least on pronotum, scutellum, corium adjacent to cuneus, and cuneus; hemelytra with some pruinosity; dorsum with scattered, moderately long to long, erect, simple setae; pronotum with short recumbent simple setae; hemelytra generally with subappressed simple setae and some flattened weakly shining subappressed setae often most conspicuous at about level of apex of clavus; erect fine spine on anterolateral angles of pronotum in some species; head with several pairs of erect fine setae; antennal vestiture variable; abdominal venter with some short decumbent setae and a lesser number of longer erect simple setae; tibiae always with reclining pale setae, sometimes with longer, fine, reclining, pale spines and fewer heavier spines, or with more numerous suberect, moderately long, fine, pale spines; all tibiae with several rows of fine black spicules; meso- and meta-femoral trichobothrial patterns as in figures 263 and 264.

Head transverse in dorsal view, much wider than long, eyes either relatively small, slightly protruding laterally beyond pronotal collar, vertex relatively broad, and frons weakly protruding anteriorly (fig. 246), or eyes very large, distinctly protruding laterally beyond pronotal collar, vertex relatively narrow, and frons not protruding beyond anterior margin of eyes (fig. 260); posterior margin of head and eyes not conforming to anterior margin of pronotum; vertex more or less flat, posterior margin rather finely carinate, either flat or elevated, excavated or straight; head viewed laterally with eyes occupying from slightly over one-half to nearly entire height (figs. 248, 250, 266); anterior margin of eyes from nearly straight to strongly emarginate at antennal insertion, fossae distinctly removed from or nearly contiguous with anterior margin of eye (figs. 247, 249, 265); antennal segment one coke-bottle-shaped, from very short and broad to more elongate and slender, antennal segment two always curving, sometimes heavy and cylindrical, often weakly to distinctly swollen distally, segments three and four ranging from weakly to distinctly terete; jugae and lora not swollen or protruding, more or less elongate; genae narrow to somewhat wider than diameter of antennal segment one; bucculae narrow, buccal cavity egg-shaped, not particularly broad; gula obsolete to distinct and sloping; labium reaching from about posterior margin of mesosternum to near apex of metacoxae; anterior and posterior pronotal lobes confluent, calli indistinct, posterior lobe moderately to strongly swollen and tumid; anterior pronotal margin in the form of a broad, flat collar, at most very weakly reflexed, not obscured by posterior margin of head; lateral pronotal margins sinuous, pronotum strongly narrowed anteriorly, posterior margin usually broadly rounded across entire width, sometimes more or less straight across scutellum; mesoscutum completely obscured by pronotum, or if exposed, demarcation from scutellum obscure; scutellum weakly to rather strongly sloping posteriorly, usually rounded transversely, extreme apex flattened; corium weakly but distinctly sinuous laterally, at most weakly reflexed ventrally on anterior one-half, costal margin not obscured in dorsal view, broadest at cuneal fracture; cuneal fracture perpendicular to corial margin, cuneal incisure obsolete, cuneus broadly tringular; inner cell of membrane with longitudinal vein straight and often nearly parallel to mesial margin of cuneus, more or less right-angled posteromesially, small cell triangular; all femora cylindrical to weakly flattened, metafemora weakly but distinctly curved; all tibiae cylindrical and straight; tarsi slender to weakly stout, segments one and two subequal in length, segment three about two times length of segment two; claws sharply curving, distally, weakly broadened basally, pulvilli small, parempodia weakly fleshy and convergent apically (fig. 262).


CHINA
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HALMAHERA
NEW GUINEA
EQUATOR
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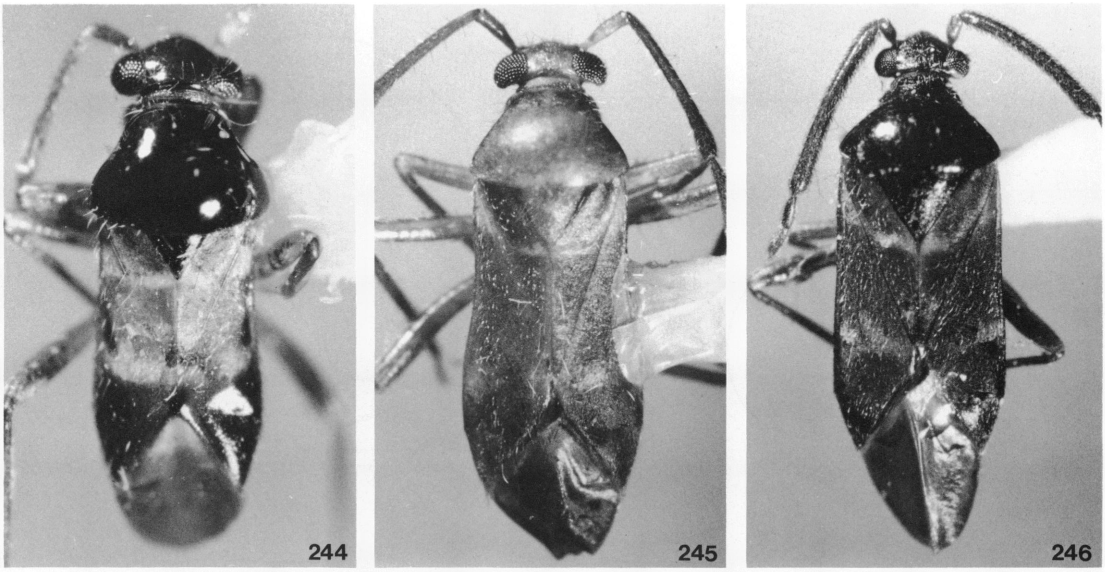
FIG. 243. Distribution of *Cleotomiris* spp. *C. bicolor* (○); *C. borneoensis* (■); *C. chinensis* (▲); *C. schneirlai* (●); unidentified specimens (□).

MALE GENITALIA: Vesica with a short, weakly curving, basal portion, a very well-developed secondary gonopore, apically membranous or with a single short spine (figs. 251, 254, 257), or with a much longer, flat, curving spine (fig. 267); phallotheca L-shaped, with no distinctive elaborations (figs. 252, 255, 258, 269); left paramere either boat-shaped and typically phyline or modified with anterior process reduced or splayed out (figs. 253, 256, 259, 268).

FEMALE: General coloration, surface texture, vestiture, and structure as in male; eyes distinctly smaller, especially in large-eyed species, vertex relatively wider; hemelytra somewhat shorter and broader than in male, general appearance weakly submacropterous.

FEMALE GENITALIA: Posterior wall simple.

ETYMOLOGY: From the Greek, *cleotos*, meaning collar, referring to the distinctive flattened pronotal collar, and *miris*; masculine.



FIGS. 244–246. *Cleotomiris* spp. 244. *C. bicolor,* holotype. 245. *C. borneoensis,* ♀, Malaysia, Sabah Prov., Sandakan Bay. 246. *C. chinensis,* holotype.

DISTRIBUTION: Fukien Prov., China; Philippine Islands (Biliran, Luzon, Mindanao, Negros); Northern Borneo; undescribed material from Thailand and peninsular Malaya.

COMMENTS ON ADDITIONAL SPECIMENS: Five additional ♂ specimens, probably representing several new species have the following data: MALAYSIA: *Malaya:* Kuala Lumpur (BMNH), 1♂; Selangor, Bukit Kutu (BMNH), 1♂. THAILAND: *Chiangmai Prov.:* Fang (Bishop), 3♂♂.

A single additional ♀ specimen, deposited in the Bishop Museum, probably representing *C. chinensis* bears the following data: CHINA: *Fukien Prov.:* Chungan, Sienfangling.

Cleotomiris bicolor, new species

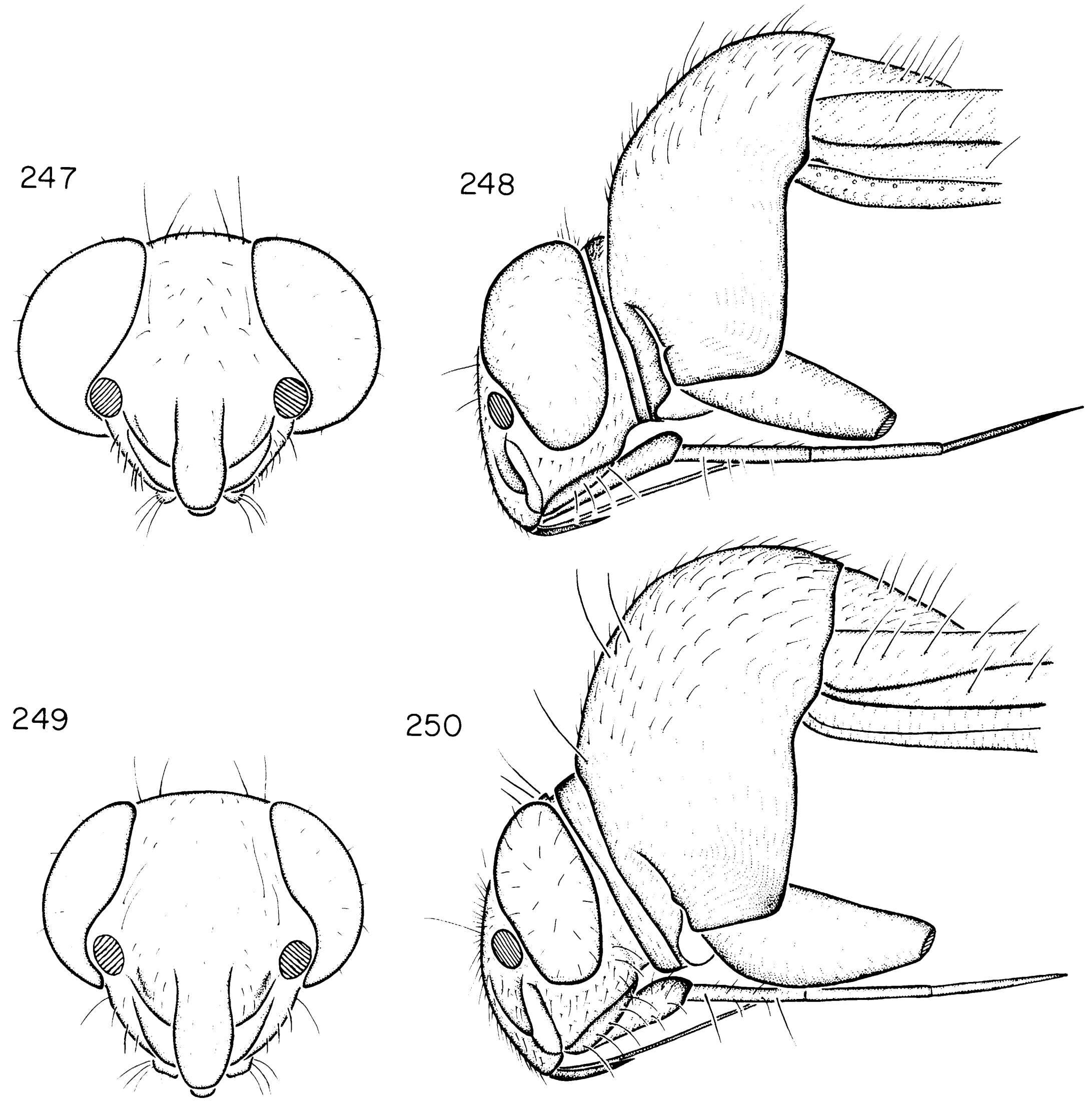
Figures 243, 244, 251–253

DIAGNOSIS: Recognized by the strongly shining castaneous pronotum, scutellum, and cuneus and adjacent corium in marked contrast with the golden brown and dirty white clavus and remainder of the corium, its small size, the moderate-sized eyes (fig. 244), and the form of the male genitalia (figs. 251–253).

DESCRIPTION: Macropterous male. Relatively small, length apex tylus-cuneal fracture 1.62, width pronotum 0.80; pronotum, scutellum, corium adjacent and anterior to cuneus, and cuneus castaneous, head and thoracic pleuron and venter somewhat lighter; appendages infuscate, all femora with some castaneous spotting on inner surface; corium and clavus anterior to level of apex of clavus generally brown to golden brown, castaneous adjacent to scutellum and at apex of clavi; dirty white as follows: a narrow transverse fascia on clavi just posterior to scutellum, endocorium just posterior to base, and a narrow transverse fascia at level of apex of clavus (fig. 244); posterior margin of metepisternum and elevated portion of metathoracic scent-gland evaporatory area ivory; membrane castaneous, somewhat lighter at base.

Generally highly polished and shining; hemelytra between base and apex of clavus granular, dull, membrane dull; dorsum with scattered, long, pale, erect simple setae; pronotum and hemelytra with some recumbent setae, shining and especially conspicuous on hemelytra at about level of apex of clavus; antennae with reclining short pale vestiture; tibiae with recumbent pale setae, and a few, fine, pale, slightly more erect spines; erect fine spine on anterolateral angles of pronotum not distinguishable from other setae; interommatidial setae on eyes very long.

Eyes relatively small, vertex relatively



FIGS. 247–250. *Cleotomiris borneoensis.* 247. Frontal view of head, ♂. 248. Lateral view of head and pronotum, ♂. 249. Frontal view of head, ♀. 250. Lateral view of head and prothorax, ♀.

broad, frons distinctly projecting and convexly rounded between eyes in dorsal view (fig. 244); posterior margin of vertex finely carinate, not elevated, weakly and smoothly concave; eyes occupying slightly over one-half of height of head in lateral view; antennae inserted just below ventral margin of eyes, anterior margin of eyes weakly sinuous, antennal fossae distinctly removed from margin of eyes; antennal segment one relatively slender and elongate, segment two increasing very slightly in diameter distally, segment three very weakly terete (segment four missing in holotype); genae broad; gula very short; labium just surpassing apex of mesocoxae; pronotum strongly elevated and swollen, posterior margin smoothly rounded; scutellum small, nearly flat longitudinally, weakly rounded transversely; veins of membrane indistinct.

MALE GENITALIA: Figures 251–253. Vesica with an erect apical spine; left paramere with anterior process greatly reduced.

FEMALE: Unknown.

ETYMOLOGY: Named for its two-colored appearance.

DISTRIBUTION: Figure 243. Philippine Islands.

HOLOTYPE ♂. PHILIPPINE ISLANDS: *Mindanao:* Misamis Oriental, Pomalihi, 21 km. W of Gingoog City, 800–1000 m., October 9, 1965, light trap, H. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

Cleotomiris borneoensis, new species

Figures 243, 245, 247–250, 254–256

DIAGNOSIS: Recognized by its reddish to golden brown coloration with the clavus basally and the entire cuneus castaneous, its rather large size, the relatively large eyes, and the form of the male genitalia (figs. 254–256).

DESCRIPTION: Macropterous male. Relatively large, length apex tylus-cuneal fracture 2.61, width pronotum 1.07; general coloration including appendages reddish to golden brown; much of clavus and corium weakly castaneous; narrow transverse fascia on clavi just posterior to scutellum and extreme anterior portion of endocorium dirty white; posterior margin of metepisternum broadly ivory; jugae ventrally and antennal segment one red proximally.

Dorsum finely granular, smooth, generally dull, covered with scattered, long, erect, fine simple setae; pronotum and scutellum with recumbent fine setae; hemelytra generally covered with recumbent woolly shining setae; anterolateral angles of pronotum with an erect fine spine; antennae with very short, neat, subappressed vestiture and scattered, erect simple setae of length equal to antennal diameter; tibiae with reclining pale setae and scattered, suberect, pale, fine spines about as long as tibial diameter.

Eyes relatively large, vertex relatively narrow, frons only slightly protruding beyond eyes in dorsal view (fig. 245); posterior margin of vertex weakly excavated between eyes, nearly straight, slightly elevated and sharply carinate; in lateral view eyes occupying about two-thirds of height of head (fig. 248); antennae inserted somewhat above ventral margin of eyes; anterior margin of eyes strongly emarginate at antennal insertion, fossa contiguous with margin of eye (fig. 247); antennal segment one elongate, segment two weakly bulbous anteapically, segments three and four (missing in holotype) weakly terete; genae slightly wider than diameter of antennal segment one; gula very short, sloping; labium reaching to near apex of metacoxae; posterior lobe of pronotum elevated and strongly swollen, posterior margin smoothly rounded; scutellum relatively large, distinctly sloping posteriorly, rounded transversely.

MALE GENITALIA: Figures 254–256. Vesica with an erect apical spine; left paramere not splayed out, anterior and posterior processes well developed.

FEMALE: Figures 249 and 250. See generic description.

FEMALE GENITALIA: Not studied.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on the island of Borneo.

DISTRIBUTION: Figure 243. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Kalabakan, November 10, 1958, primary forest, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

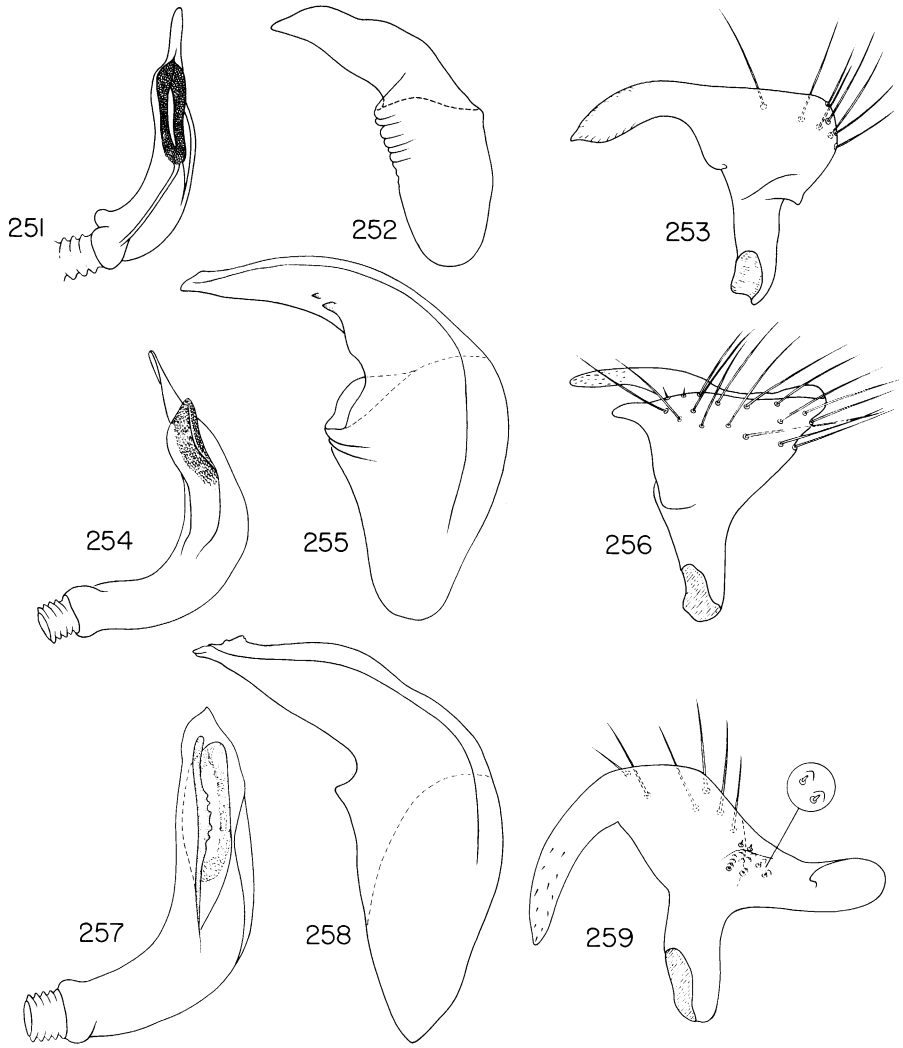
ADDITIONAL SPECIMENS: MALAYSIA: *Sabah Prov.:* Sandakan Residency, Sandakan Bay (NW), Sepilok Forest Reserve, 1–10 m., October 26, 1957 (Gressitt; Bishop), 1♀.

Cleotomiris chinensis, new species

Figures 243, 246, 257–259, 261

DIAGNOSIS: Recognized by the generally castaneous coloration, the relatively small eyes and wide vertex (fig. 246), the rather flat and conspicuously rugulose anterior pronotal lobe, the very distinctly curved, stout, cylindrical second antennal segment (fig. 246), and the form of the male genitalia (figs. 257–259).

DESCRIPTION: Macropterous male. Form vaguely antlike; moderate-sized, length apex tylus-cuneal fracture 2.29, width pronotum 1.07; general coloration castaneous to nearly black, appendages somewhat light; narrow



FIGS. 251–259. *Cleotomiris* spp. 251–253. *C. bicolor*. 251. Vesica. 252. Phallotheca. 253. Left paramere. 254–256. *C. borneoensis*. 254. Vesica. 255. Phallotheca. 256. Left paramere. 257–259. *C. chinensis*. 257. Vesica. 258. Phallotheca. 259. Left paramere.

transverse fascia on clavi just posterior to scutellum dirty white; posterior margin of metepisternum broadly ivory.

Hemelytra entirely granular, dull; head, anterior lobe of pronotum, and scutellum distinctly rugulose, posterior lobe of pronotum smooth, polished and shining; pronotum generally with recumbent short setae, a few longer reclining simple setae, and an erect fine spine on the anterolateral angles; scutellum and hemelytra with scattered suberect simple setae; hemelytra generally with recumbent shining setae; antennae generally with short, neat, reclining vestiture; interommatidial setae short; all tibiae with reclining common setae and a few longer, scattered, inclined, fine, pale spines.

Eyes relatively small, vertex relatively broad, frons weakly rounded and projecting anterior to eyes in dorsal view (fig. 246); posterior margin of head straight across between eyes, in the form of a fine, slightly raised carina; eyes occupying about two-thirds height of head in lateral view; antennae inserted just above ventral margin of eyes, fossae contiguous with anterior margin of eyes, margin distinctly emarginate dorsad of antennal insertion; antennal segment one coke-bottle-shaped, relatively short and stout, segments two distinctly curving, about one and one-half times diameter of segment one, of uniform diameter over entire length, segment three and four short, subequal in length, more or less terete, about two-thirds diameter of segment two (fig. 246); genae about as wide as diameter of antennal segment one; gula obsolete; labium reaching to posterior margin of mesosternum; anterior lobe of pronotum more or less flat anteroposteriorly, posterior lobe moderately elevated and swollen, posterior margin nearly straight across scutellum; scutellum small, very slightly swollen, not distinctly sloping posteriorly; lateral corial margin very weakly sinuous.

Male Genitalia: Figures 257–259. Vesica with apex blunt; left paramere splayed out, anterior process elongate and curving.

Female: See generic description.

Female Genitalia: Not examined.

Measurements: See Appendix.

Etymology: Named for its occurrence in China.

Distribution: Figure 243. Fukien Prov., China.

Holotype ♂: PEOPLE'S REPUBLIC OF CHINA: *Fukien Prov.:* Chungan, Bohea Hill, January 16, 1941, T. C. Maa collector; deposited in B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype, but December 18, 1940–January 20, 1941, January 1, 1942, and February 8–10, 1944 (AMNH, Bishop), 45♂♂, 73♀♀.

Cleotomiris schneirlai, new species

Figures 243, 260, 262, 264–269

Diagnosis: Recognized by the generally castaneous coloration with somewhat lighter hemelytra and appendages, the distinct white and pruinose areas on the hemelytra, the white trochanters, the dorsal surface without any highly polished strongly shining areas, the very large eyes, the strongly swollen pronotum (fig. 260), and the form of the vesica with the long, flattened curving apical process (fig. 267).

Description: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture 2.50, width pronotum 1.09; general coloration castaneous, pronotum and scutellum especially intense, most of meso- and metacoxae and all trochanters yellow-white; conspicuous transverse fascia on clavi just posterior to scutellum and adjacent subbasal portion of endocorium dirty white (fig. 260); corium at level of apex of clavi pruinose; membrane fumose, lighter basally; posterior margin of metepisternum ivory; antennal segment one partially translucent with some reddish markings.

Dorsum generally granular, head, pronotum, and scutellum very weakly shining, hemelytra entirely dull; dorsum with scattered, pale, moderately long, erect, simple setae; pronotum with very short, recumbent setae, hemelytra with recumbent shining setae; antennae with very short neat, subappressed vestiture and scattered erect, fine setae of length somewhat less than antennal diameter; anterolateral angles of pronotum with an erect fine spine; interommatidial setae very short; all tibiae with inconspicuous short simple setae and scattered inclined, fine, pale spines about as long as tibial diameter.

Eyes very large, distinctly protruding laterally and beyond frons in dorsal view; vertex relatively narrow, posterior margin concave, raised, finely carinate; eyes occupying about four-fifths of height of head in lateral view (fig. 266); antennae inserted somewhat above ventral margin of eye, fossae contiguous with eyes, eyes strongly emarginate at and above antennal insertion (fig. 265); antennal segment one coke-bottle-shaped, moderately elongate, segment two distinctly increasing in diameter distally, segments three and four weakly terete, subequal in length and diameter, about equal in diameter to greatest diameter of segment two; genae relatively narrow, no broader than diameter of antennal segment one; gula short, inclined; labium reaching between apices and meso- and metacoxae; pronotum strongly elevated and swollen, posterior margin straight across, lateral corial margin distinctly sinuous.

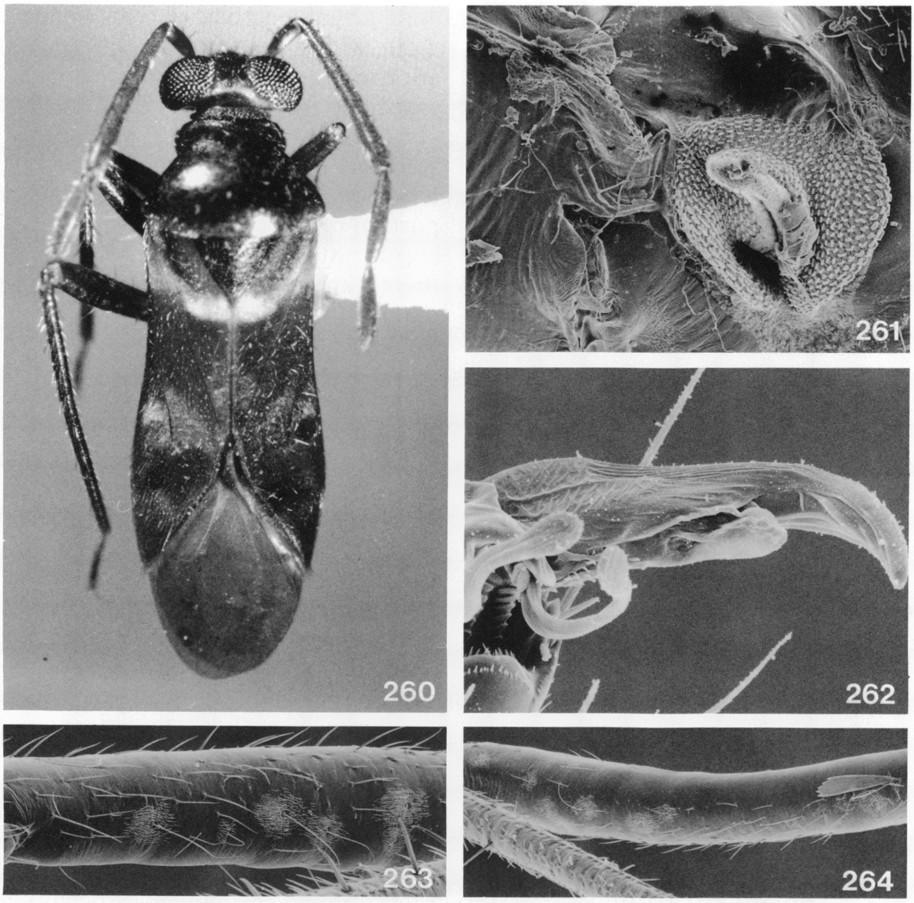
Male Genitalia: Figures 267–269.

Female: See generic description.

Female Genitalia: Posterior wall simple.

Measurements: See Appendix.

Etymology: Named for T. C. Schneirla.



FIGS. 260–264. *Cleotomiris* spp. 260. *C. schneirlai,* holotype. 261. *C. chinensis,* lateral view of metathorax. 262–264. *C. schneirlai.* 262. Pretarsus. 263. Mesofemur, showing trichobothria. 264. Metafemur, showing trichobothria.

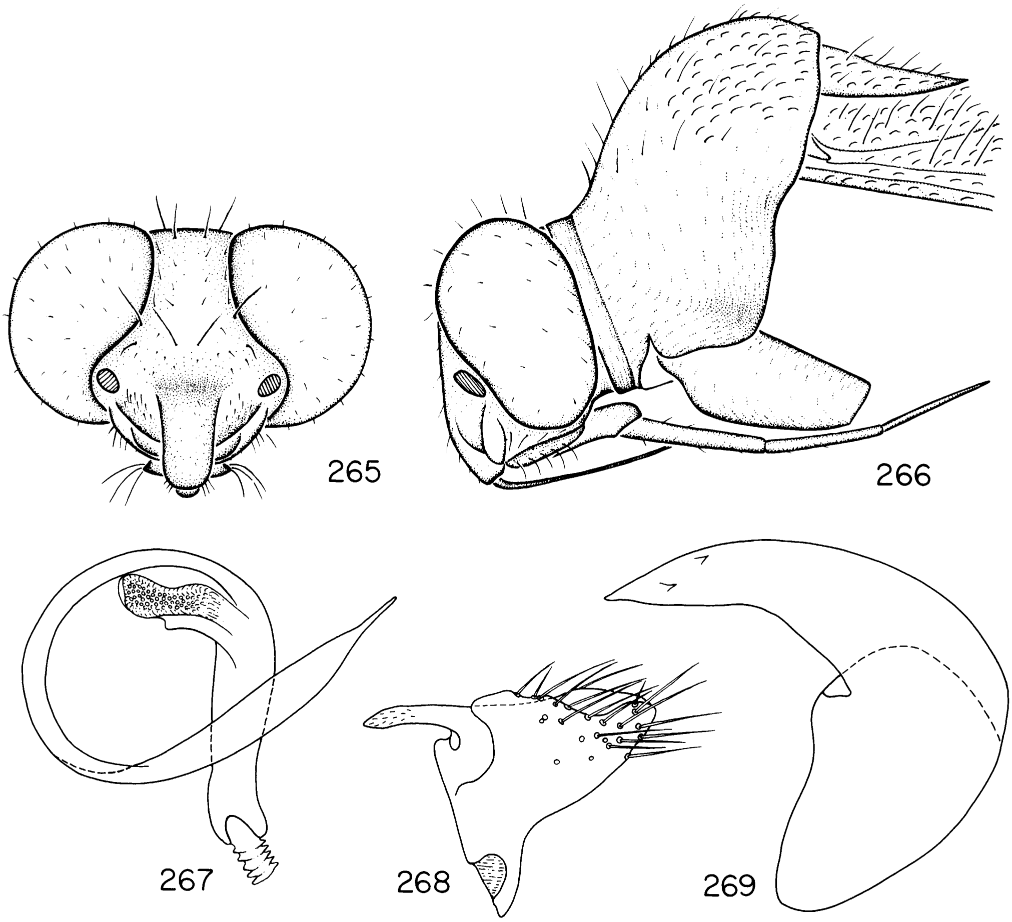
DISTRIBUTION: Figure 243. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Negros Island:* Camp Lookout, Dumaguete, 1300 feet, February 15–April 15, 1961, T. C. Schneirla and A. Reyes collectors; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype (AMNH) 21♂♂, 6♀♀. PHILIPPINE ISLANDS: *Biliran Island* (Baker; USNM), 2♀♀; *Luzon:* Manila, 1911 (Piper; USNM), 1♀. *Mindanao:* Misamis Oriental, Gingoog, March 26–27, 1960, light trap (Torrevillas; Bishop), 1♂. *Sula Group:* Jolo Island, 8–10 km. S of Taglibi, 120 m., October 1, 1958 (Milliron; Bishop), 1♂. *Negros Island:* Dumaguete, October 26–29, 1959 (Quate and Yoshimoto; Bishop), 1♀. *Palawan Island:* Brookes Point, Uring Uring, August 23, 1961 (Noona Dan; Copenhagen), 1♂; Mantalingajan, Pinigisan, 600 m., September 10, 1961 (Noona Dan; Copenhagen), 1♂.

CLEOTOMIROIDES, NEW GENUS

DIAGNOSIS: Recognized by the antlike appearance, the weakly fleshy and apically convergent parempodia, the strongly protruding metathoracic scent-gland evaporatory area (figs. 273, 274), the elongate relatively slender first antennal segment, the collar-like weakly reflexed anterior margin of the pronotum, the strongly inflated (tumid) anteriorly declivent



FIGS. 265–269. *Cleotomiris schneirlai.* 265. Frontal view of head, ♂. 266. Lateral view of head and prothorax, ♂. 267. Vesica. 268. Left paramere. 269. Phallotheca.

pronotum, the strongly declivent largely confluent vertex and frons (figs. 271, 272), the cuneus broadly triangular, the obsolete cuneal fracture at right angles to the corial margin and the form of the vesica (figs. 280, 283).

DESCRIPTION: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture 2.37–2.54, width pronotum 1.03–1.13, light brown to castaneous, with some contrasting lighter markings, but never on or adjacent to cuneus; body surface generally finely granular, usually dull; some areas of hemelytra pruinose; vestiture of dorsum with some erect, moderately long simple setae, especially on hemelytra, pronotum usually with some recumbent simple setae, hemelytra often with some recumbent slightly flattened shining setae; anterolateral angles of pronotum with a single, erect, fine spine; abdominal venter with simple setae of varying length; all tibiae covered with reclining pale simple setae and scattered suberect slender spines, all of length slightly less than or about equal to tibial diameter; meso- and meta-femoral trichobothrial patterns as in figures 276 and 277; all tibiae with several rows of minute spicules.

Head transverse, rather strongly flattened anteroposteriorly in dorsal view; posterior margin of eyes and vertex roughly conforming to contour of anterior margin of pronotum; posterior margin of vertex finely carinate, nearly erect, slightly concave between eyes (figs. 271, 272); vertex and frons strongly sloping, more or less confluent; eyes not particularly large, occupying about two-thirds of height of head in lateral view, anterior margin conspicuously emarginate at antennal insertion; antennae inserted just above ventral margin of eye, fossae contiguous with anterior margin of eyes (fig. 278); antennal segment one relatively slender, elongate, coke-bottle-shaped, segment two increasing slightly and gradually in diameter distally, greatest diameter about equal to that of segment one, segments three and four elongate, combined length distinctly greater than that of segment two, diameter about equal to greatest diameter of segment two, segment four very weakly terete; jugae and lora distinct, somewhat elongate; bucculae broad mesially, distinctly narrowed posteriorly, buccal cavity very broadly ovate; genae nearly twice as wide as diameter of antennal segment one; gula short but not obsolete; labium reaching to about apex of metacoxae; anterior and posterior lobes of pronotum confluent, calli indistinct, posteriorly strongly elevated and swollen (subtumid), anterior pronotal margin in the form of a flattened, somewhat sunken collar with a slightly reflexed anterior margin, lateral margins straight to rather distinctly concave, posterior margin more or less straight across mesoscutum, smoothly rounded laterally; mesoscutum slightly exposed or completely obscured by pronotum, scutellum somewhat excavated and sloping posteriorly, apex flattened; lateral corial margins strongly sinuous, hemelytra broadest at cuneal fracture, exocorium obsolete at midpoint of corium, but costal vein not obscured when viewed from above; cuneal fracture at right angles to lateral margin of hemelytra, cuneal incisure obsolete; cuneus broadly triangular; inner margin of large cell of membrane more or less parallel with mesial margin of cuneus, posteromesial angle rounded, small cell triangular; metathoracic scent-gland evaporatory area as in figures 273 and 274; all femora in form of a slightly flattened cylinder, meso- and meta-femora noticeably bent; mesotibiae cylindrical and straight; metatarsus relatively short and stout, segments one and two subequal in length, segment three somewhat longer; claws broadened basally, strongly curved distally, pulvilli small, parempodia weakly fleshy and convergent apically (fig. 275).

MALE GENITALIA: Vesica C-shaped, not very short, with a well-developed secondary gonopore, and two apical spines, one short and one relatively long (figs. 280, 283); phallotheca more or less L-shaped, dorsal margin of apical region lamellate and raised; left paramere typically phyline, boat-shaped, posterior process elongate and slender, anterior process somewhat elongate.

FEMALE: See *Cleotomiroides ferrugineus.*

FEMALE GENITALIA: Not examined.

TYPE SPECIES: *Cleotomiroides ferrugineus,* new species.

ETYMOLOGY: Named for its similarity of appearance to *Cleotomiris.*

DISTRIBUTION: Figure 270. Northern Borneo, Java (undescribed female), West Hupeh, China (undescribed female) and Idjen Blawen [?].

ADDITIONAL SPECIMENS: Specimens representing several probably undescribed species of *Cleotomiroides* bear the following data: CHINA: *West Hupeh:* valley to ridge (Bishop), 1♂. INDONESIA: *Java:* Tegalega (Bishop), 1♂. MALAYSIA: *Sabah Prov.:* 9.8 km. SW of Tenom and 19 km. N of Kalabakan (Bishop), 2♀♀; Idjen Blawen[?] (Leiden), 1♀.

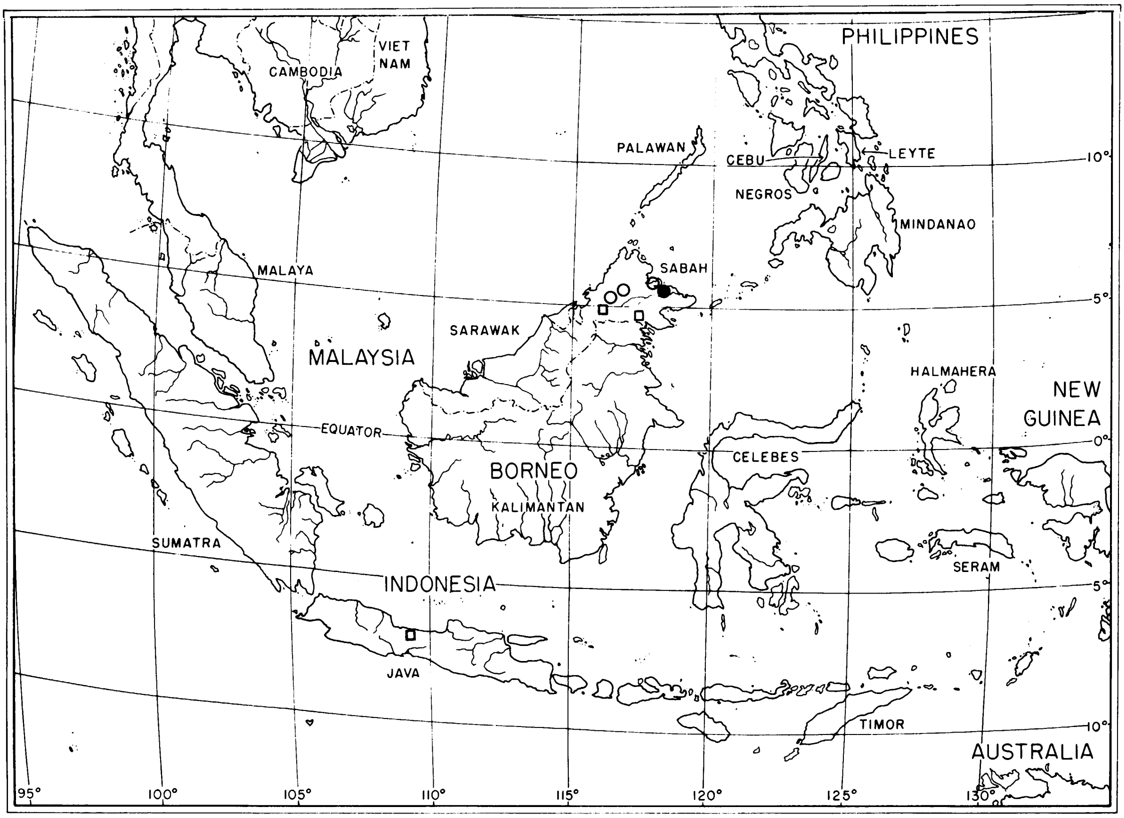
Cleotomiroides ferrugineus, new species

Figures 270, 271, 278–282

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the rust-colored body and hemelytra, and the form of the vesica (fig. 280).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.46, width pronotum 1.08; general coloration of body, wings, and appendages medium rust brown; clavus at level of scutellum, membrane, and in some specimens cuneus, castaneous; corium and outer margin of adjacent clavus at level of scutellum and narrow transverse macula on clavus at apex of scutellum, a small triangular macula on exocorium at about level of apex of clavus, all trochanters, and meso- and meta-coxae dirty white; posterior margin of metepisternum ivory.

Surface texture and vestiture basically as in generic description; dorsum entirely dull granular, distinctly pruinose on clavus at level of apex of scutellum, on apical one-fourth of clavus, and in the form of transverse fascia on corium at level of apex of clavus.



VIET NAM
CAMBODIA
PHILIPPINES
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
MALAYA
SABAH
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 270. Distribution of *Cleotomiroides* spp. *C. ferrugineus* (○); *C. spadix* (●); unidentified specimens (□).

Structure generally as in generic description; mesoscutum only moderately exposed.

MALE GENITALIA: Figures 280–282.

FEMALE: Macropterous. Basic structure, coloration, and vestiture very similar to male, except eyes somewhat smaller, vertex relatively wider, and height of head below eyes relatively greater.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its rusty, reddish brown coloration; from the Latin, *ferrugineus*, rust colored.

DISTRIBUTION: Figure 270. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.*: West Coast Residency, Ranau, 8 mi. N of Paring Hot Springs, 500 m., October 8–11, 1958, sweeping, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

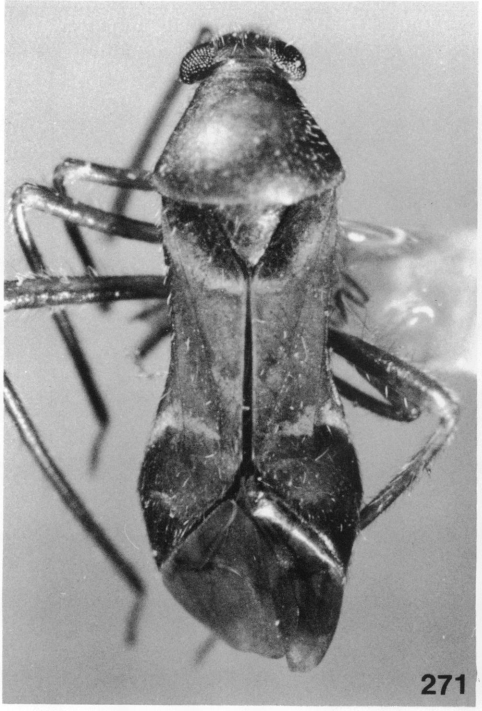
PARATYPES: Same data as holotype (USNM), 1♀. MALAYSIA: *Sabah Prov.*: Sandakan Residency: Sandakan Bay (NW), Sepilok Forest Reserve, 1–10 m., October 26, 1957 (Gressitt; Bishop), 1♂; Sandakan (Baker; USNM), 1♂; West Coast Residency, Ranau, 500 m., September 28–October 18, 1958 (Quate and Maa; AMNH, Bishop), 2♀♀.

Cleotomiroides spadix, new species

Figures 270, 272, 283–285

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the castaneous coloration, and the form of the vesica.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.41, width pronotum 1.06; basic pattern of coloration as in *ferrugineus*, but castaneous instead of rust colored; pronotum, scutellum, and basal one-third of clavus distinctly darker than remainder of body and wings; placement and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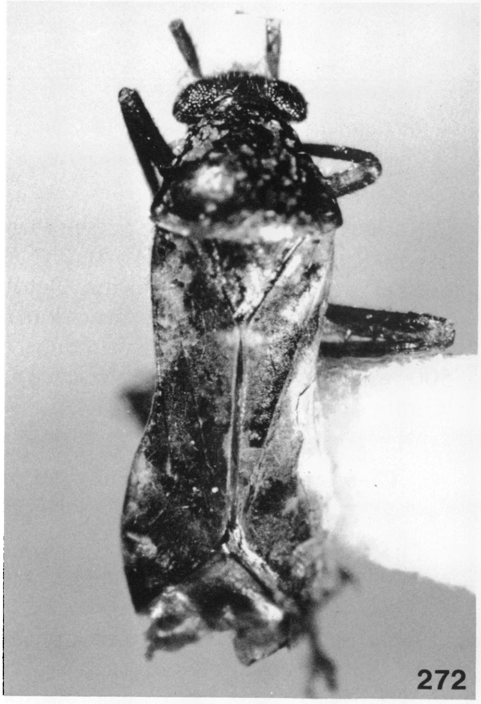
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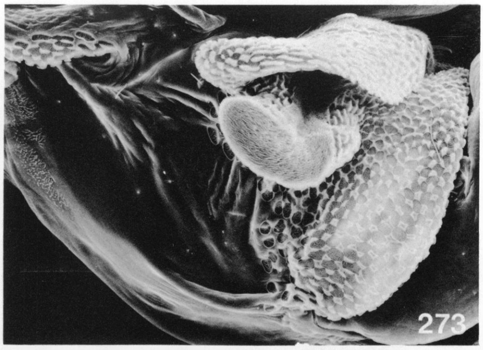
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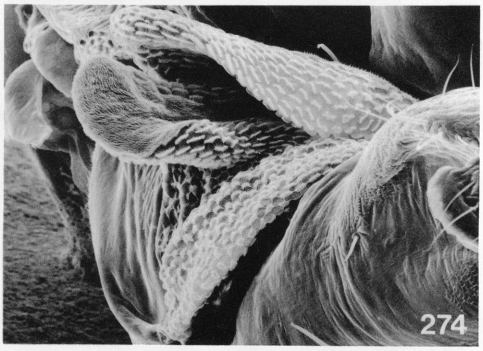
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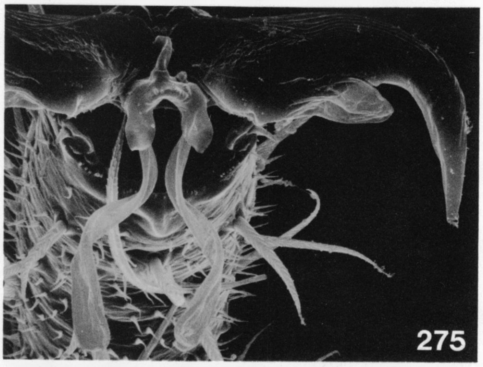
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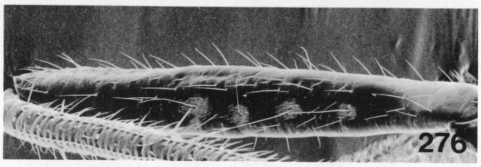
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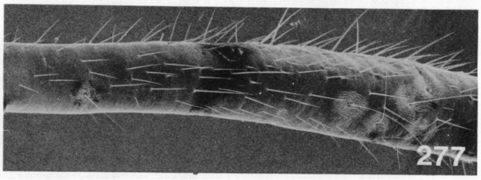
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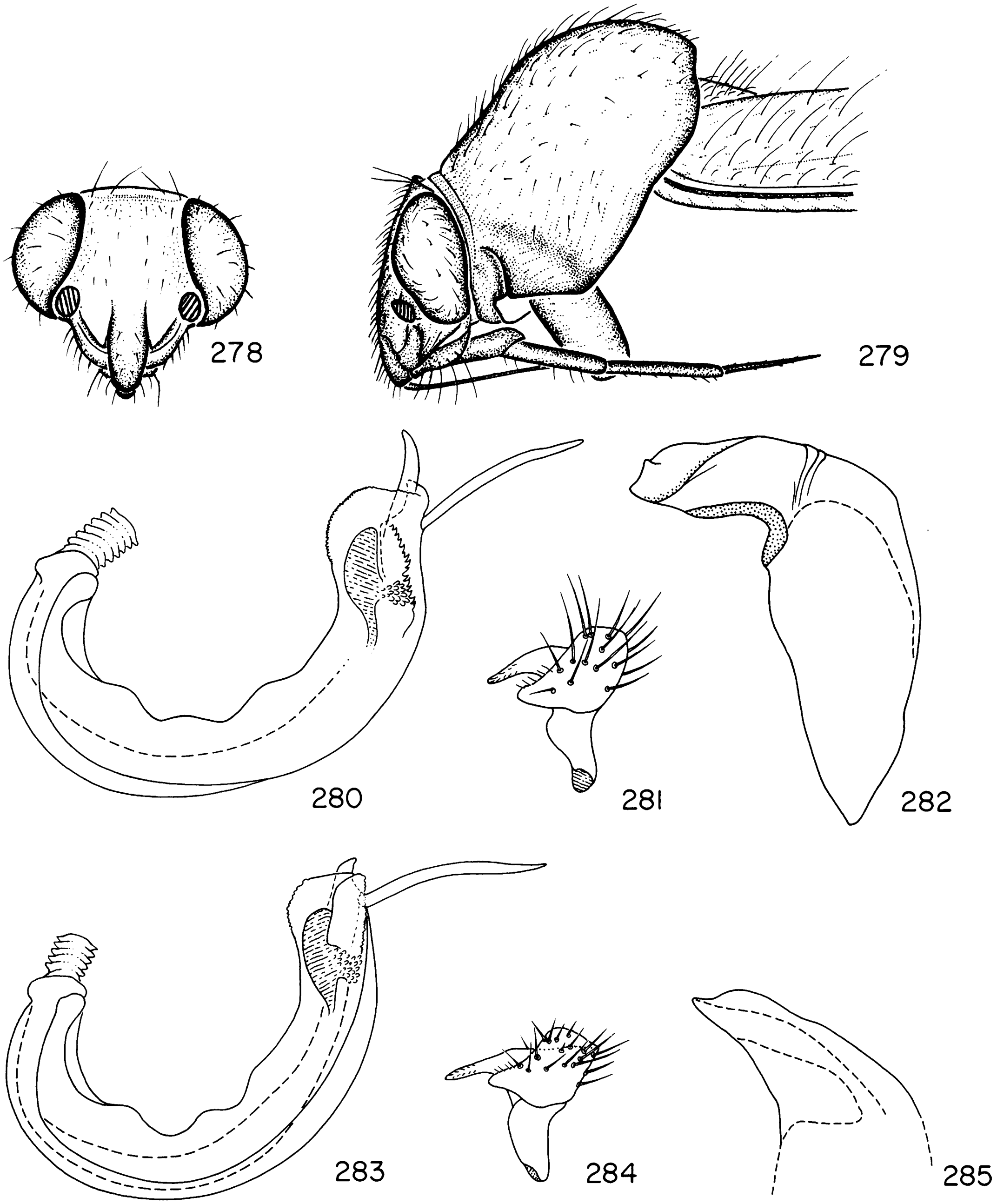
FIGS. 271–277. *Cleotomiroides* spp. 271. *C. ferrugineus,* ♂, Malaysia, Sabah Prov., Sandakan Bay. 272. *C. spadix,* holotype. 273–277. *Cleotomiroides* spp., ♀, Malaysia, Sabah Prov., 19 km. N of Kalabakan. 273. Metathoracic scent-gland evaporatory area, lateral view. 274. Metathoracic scent-gland evaporatory area, posterolateral view. 275. Pretarsus. 276. Mesofemur, showing trichobothria. 277. Metafemur, showing trichobothria.



FIGS. 278–285. *Cleotomiroides* spp. 278–282. *C. ferrugineus.* 278. Frontal view of head. 279. Lateral view of head and prothorax. 280. Vesica. 281. Left paramere. 282. Phallotheca. 283–285. *C. spadix.* 283. Vesica. 284. Left paramere. 285. Phallotheca.

pattern of white and ivory coloration as in *ferrugineus.*

Surface texture and vestiture basically as in generic description.

Structure generally as in generic description; mesoscutum rather broadly exposed.

MALE GENITALIA: Figures 283–285.

FEMALE: Unknown.

ETYMOLOGY: From the Greek (and Latin) *spadix*, chestnut color.

DISTRIBUTION: Figure 270. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Tawau, Quoin Hill, August 3–7, 1962, malaise trap, H. Holtmann collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPE: MALAYSIA: *Sabah Prov.:* Sandakan Residency, Samawang near Sandakan, July 13, 1927, at light (BMNH), 1♂.

WYGOMIRIS, NEW GENUS

DIAGNOSIS: Recognized by its more or less conventional (relatively non-antlike) mirid habitus, brownish to blackish coloration with at most weakly contrasting light markings (figs. 287, 298–300), the weakly fleshy convergent parempodia (fig. 290), the anterior pronotal margin in the form of a distinct collar (figs. 294, 302), the moderately protruding metathoracic scent-gland evaporatory area (fig. 291), the cuneus broadly triangular, the cuneal incisure obsolete and angled slightly anteromesially, the mixed dorsal vestiture of recumbent shining woolly setae and suberect, moderately long, simple setae, and the form of the male genitalia (figs. 295–297, 303–311).

DESCRIPTION: Macropterous male. Moderately small, range length apex tylus-cuneal fracture 1.83–2.50, range width pronotum 0.96–1.02; more or less conventional relatively non-antlike mirid habitus, coloration generally brownish; body surface generally smooth, sometimes moderately shining, hemelytra granular; dorsal pubescence mixed, scattered, suberect, moderately long, simple setae and moderately dense (especially on hemelytra) recumbent, shining, woolly setae; anterolateral angles of pronotum with a single erect spine; all tibiae with pale reclining simple setae intermixed with pale or dark reclining slender spines, all about the length of tibial diameter; meso- and meta-femoral trichobothrial patterns as in figures 288 and 289; all tibiae with several rows of minute spicules.

Head transverse in dorsal view, frons and tylus at most slightly projecting beyond anterior margin of eyes; posterior margin of eyes slightly removed laterally and not contiguous with anterior margin of pronotum; vertex more or less flat transversely, at most weakly sloping anteriorly, posterior margin sometimes slightly excavated, in the form of a finely rounded, slightly elevated carina (figs. 287, 298–300); frons more or less vertical; eyes often very large and occupying from five-sixths to nearly entire height of head (figs. 294, 302); antennae inserted slightly above ventral margin of eyes, anterior margin of eyes moderately to strongly emarginate at antennal insertion; antennal fossa contiguous with anterior margin of eye (figs. 293, 301); antennal segment one relatively short, stout, coke-bottle-shaped; antennal segments two, three, and four relatively stout, segment two increasing slightly in diameter distally, segment three cylindrical, segment four weakly terete; jugae at most slightly protruding, jugae and lora short; bucculae moderately narrow, of uniform width, buccal cavity very broadly egg-shaped; genae nearly obsolete to about as wide as diameter of antennal segment one; gula obsolete; labium reaching to about apices of metacoxae; pronotum more or less trapezoidal, lobes at most very weakly demarcated, elevated posteriorly, weakly to moderately swollen, anterior margin with a well-developed flat collar about as wide as tibial diameter, with a very slightly reflexed anterior margin (figs. 294, 298, 302), lateral margin nearly straight to slightly sinuous, posterior margin rather broadly rounded at least laterally; mesoscutum rather broadly exposed, indistinctly separated from scutellum, mesoscutum and scutellum together broadly triangular, nearly flat to weakly arched, weakly transversely rugose; hemelytra convexly rounded to weakly sinuous laterally, broadest just anterior to cuneal fracture; anterior costal margin not ventrally reflexed, exocorium conspicuous over entire length; cuneal incisure nonexistent, corio-cuneal margin continuous, not interrupted by cuneal incisure, cuneal fracture noticeably angled anteromesially; cuneus very broadly triangular (figs. 287, 298–300), inner cell of membrane elongate, broader posteriorly than anteriorly, posteromesial angle sharply rounded, outer cell small, triangular; all femora slightly flattened, elongate, narrowly rectangular; all tibiae cylindrical, protibiae flared distally; metatarsus relatively short and stout, segments one and two subequal in length, segment three about half again as long; claws

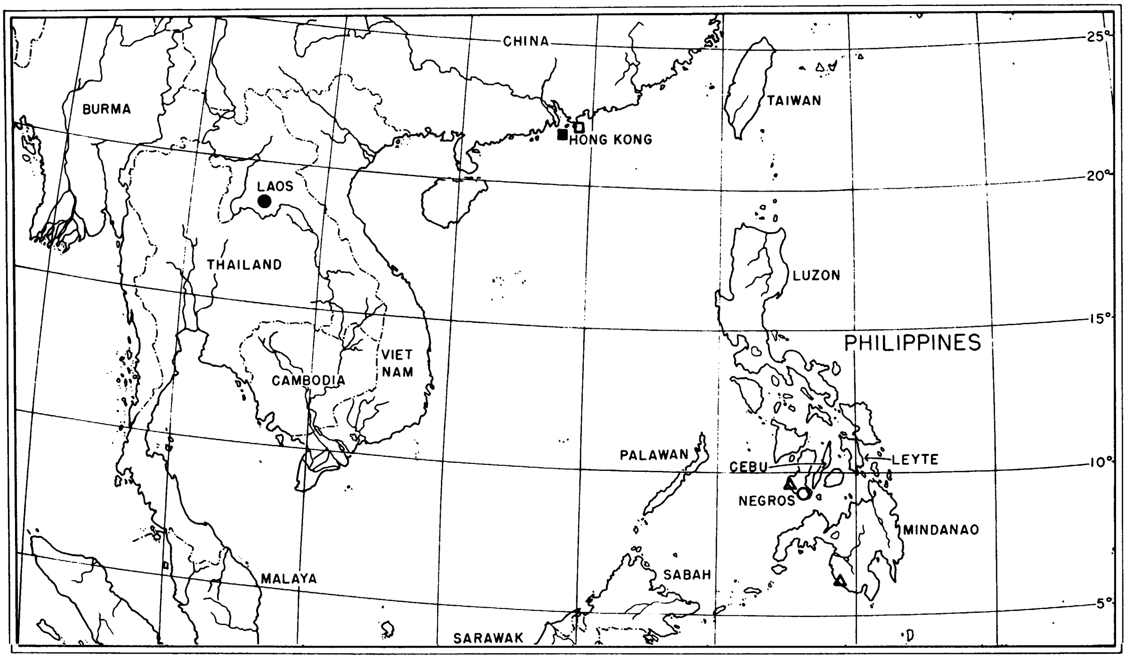


FIG. 286. Distribution of *Wygomiris* spp. *W. dumaguete* (○); *Y. indochinensis* (●); *Y. mingorum* (□); *Y. taipokau* (■); unidentified (△).

broadened basally, smoothly and sharply curved distally, pulvilli small, parempodia weakly fleshy, convergent apically (fig. 290).

MALE GENITALIA: Vesica more or less J-shaped, usually with a single, moderately elongate, apical spine, apex sometimes more elaborately developed and sclerotized, subapical, shaft of vesica usually simple, sometimes with a median spinelike process (fig. 306); phallotheca more or less rectilinear; left paramere not at all to strongly flattened and splayed out, anterior and posterior processes variously developed.

FEMALE: Macropterous. No female specimens are known which can be determined to be conspecific with the males described below. Four Philippine Islands and one New Guinea females suggest, however, that in general structure females are very similar to males. As is generally the case in the Phylinae, the eyes in the females are somewhat smaller than in the males, the vertex is relatively wider, and the height of the head below the eyes is relatively greater.

FEMALE GENITALIA: Not examined.

ETYMOLOGY: Named for Pedro Wygodzinsky; masculine.

TYPE SPECIES: *Wygomiris mingorum,* new species.

DISTRIBUTION: Hong Kong, Laos, Philippine Islands, New Guinea (undescribed female).

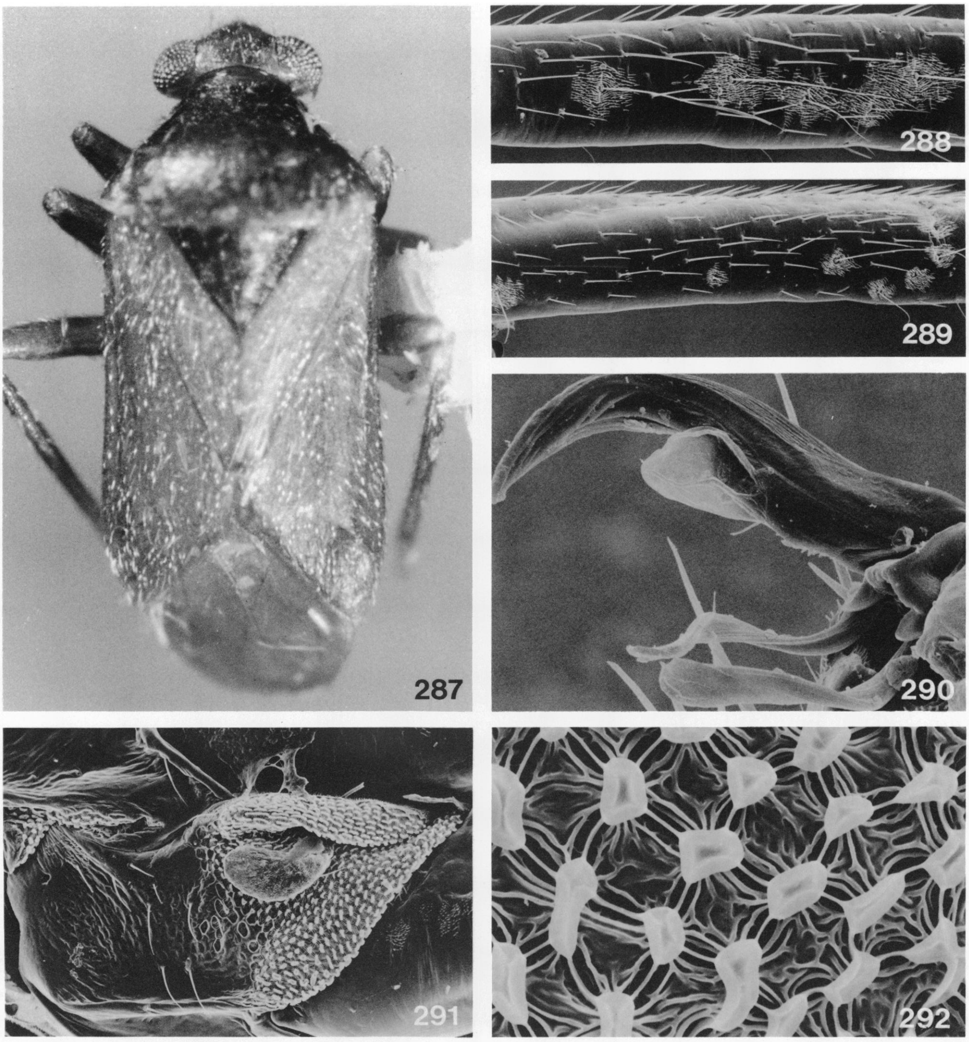
ADDITIONAL SPECIMENS: Specimens, probably representing several undescribed species bear the following data: PAPUA NEW GUINEA: *Morobe Prov.:* Wau (Bishop), 1♀. PHILIPPINE ISLANDS: *Luzon:* Mountain Prov., Ifugao, Mayoyao (Bishop), 1♂. *Mindanao:* Cotabato Prov., Milbuk (Bishop), 1♀. *Negros Island:* Camp Lookout, Dumaguete (AMNH), 1♀. *Mindanao* [?]: Valencia (Bishop), 1♀; [?] Island (Bishop), 1♀.

Wygomiris dumaguete, new species

Figures 286–287, 293–297

DIAGNOSIS: Recognized by its medium brown coloration, relatively small size, and the form of the male genitalia (figs. 295–297).

DESCRIPTION: Macropterous male. Relatively small, length apex tylus-cuneal fracture 1.83, width pronotum 0.97; general color-



FIGS. 287–292. *Wygomiris* spp. 287. *W. dumaguete,* holotype. 288–292. *Wygomiris* sp., ♂, Philippine Islands, Luzon, Mountain Prov., Mayoyao. 288. Mesoleg, showing trichobothria. 289. Metaleg, showing trichobothria. 290. Pretarsus. 291. Metathoracic scent-gland evaporatory area, lateral view. 292. Detail of scent-gland evaporatory area.

ation medium brown, hemelytra somewhat lighter than remainder of body and appendages.

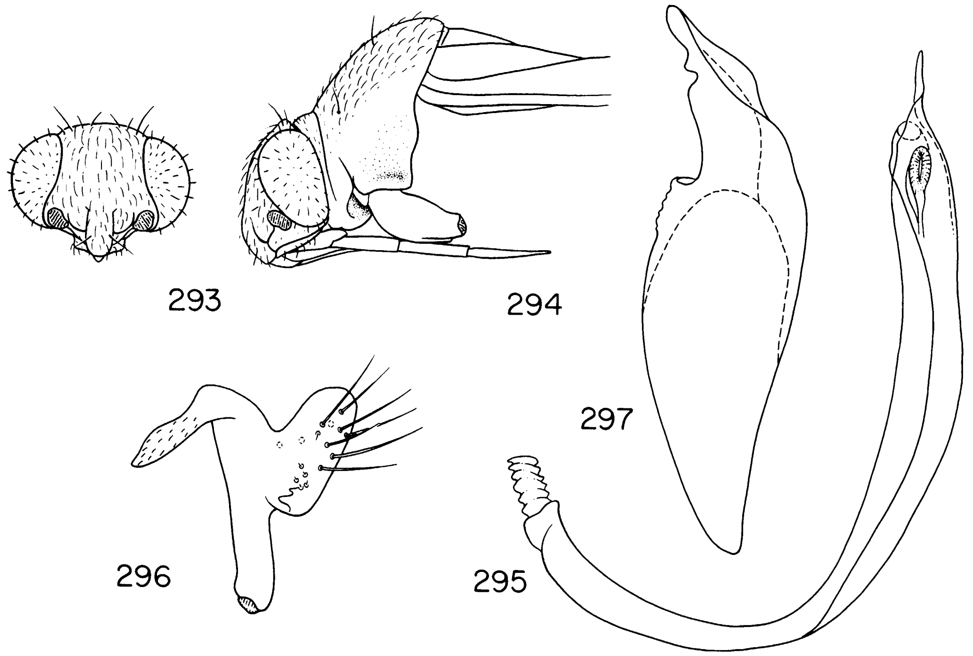
Surface texture and vestiture as in generic description; pronotum and scutellum weakly shining, pronotum with recumbent sericeous setae laterally only.

Eyes relatively small, occupying about five-sixths of height of head, vertex and frons weakly sloping (fig. 294); posterior margin of vertex weakly concave; anterior margin of eyes moderately emarginate at antennal insertion (fig. 293); jugae weakly protruding; genae about as wide as diameter of antennal segment one; lateral pronotal margins nearly straight, posterior margin straight across mesoscutum; lateral hemelytral margins weakly sinuous (fig. 287).

MALE GENITALIA: Figures 295–297. Vesica with a single apical spine and no ornament on shaft; left paramere somewhat splayed out, anterior process greatly reduced.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.



FIGS. 293–297. *Wygomiris dumaguete.* 293. Frontal view of head, ♂. 294. Lateral view of head and prothorax, ♂. 295. Vesica. 296. Left paramere. 297. Phallotheca.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 286. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Negros Island:* Camp Lookout, Dumaguete, 1600 ft., May 15, 1961, T. C. Schneirla and A. Reyes collectors; deposited in the American Museum of Natural History, New York.

Wygomiris indochinensis, new species

Figures 286, 298, 301–305

DIAGNOSIS: Recognized by its moderate size, contrasting golden brown head, pronotum and scutellum, yellowish median portion of the hemelytra, and castaneous posterior portion of corium and cuneus, the strongly shining pronotum and scutellum (fig. 298) as well as the form of the male genitalia (figs. 303–305).

DESCRIPTION: Macropterous male. Moderate sized, length apex tylus-cuneal fracture 1.94, width pronotum 0.96; head, pronotum, scutellum, anterior one-fourth of corium and clavus, and appendages generally golden brown; median portion of hemelytra from apex of scutellum to about apex of clavus yellowish, posterior portion of corium and entire cuneus castaneous; membrane infuscate, somewhat light basally between cunei (fig. 298).

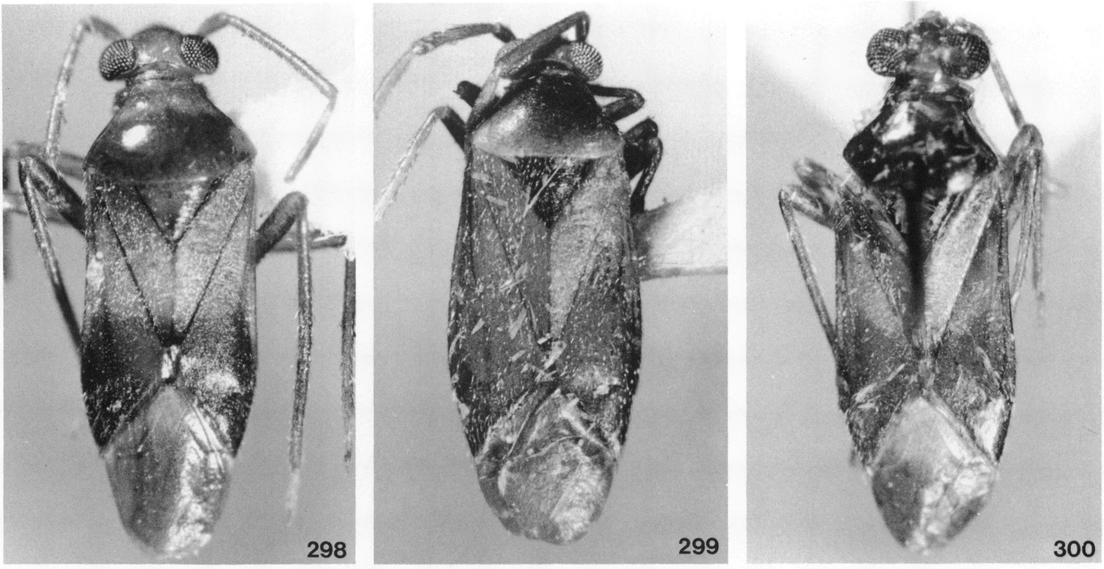
Surface texture as in generic description; head, pronotum, and scutellum strongly shining; pronotum and scutellum without conspicuous sericeous recumbent setae.

Eyes moderately large, occupying about five-sixths of height of head (fig. 302), head in frontal view as in figure 301; vertex weakly sloping, frons nearly vertical; posterior margin of vertex weakly concave; genae about as wide as antennal segment one; pronotum narrowed anteriorly and concave anterolaterally; calli distinct, separated by distance equal to diameter of antennal segment one; posterior pronotal margin evenly rounded across entire width; lateral hemelytral margins weakly but distinctly sinuous.

MALE GENITALIA: Figures 303–305. Vesica with an elongate, slender, apical spine, shaft with a small median barb; left paramere not splayed out, anterior process developed.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.



FIGS. 298–300. *Wygomiris* spp. 298. *W. indochinensis,* holotype. 299. *W. mingorum,* holotype. 300. *W. taipokau,* holotype.

ETYMOLOGY: Named for its occurrence in Indochina.

DISTRIBUTION: Figure 286. Laos.

HOLOTYPE ♂: LAOS: *Vientiane Prov.:* Ban Van Jue, December 15, 1966, native collector; deposited in the B. P. Bishop Museum, Honolulu.

Wygomiris mingorum, new species

Figures 286, 299, 306–308

DIAGNOSIS: Recognized by the golden brown contrasting with castaneous coloration, the weakly convex lateral corial margins, the moderate size (fig. 299), and the form of the male genitalia (figs. 306–308).

DESCRIPTION: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture 2.49, width pronotum 1.01; anterior lobe of pronotum, mesoscutum, and scutellum castaneous, corium posterolaterally, and cuneus tending toward castaneous, remainder of dorsum, including pronotal collar anteriorly, golden brown (fig. 299); all appendages reddish brown.

Surface texture and vestiture as in generic description; pronotum and scutellum dull; pronotum with recumbent sericeous setae laterally only.

Eyes moderately large, occupying nearly entire height of head in lateral view; vertex nearly flat, frons very weakly sloping; eyes rather strongly emarginate at antennal insertion; lateral pronotal margins straight, posterior margin straight across scutellum; lateral corial margin somewhat irregularly convex, widest just anterior to cuneal incisure (fig. 299).

MALE GENITALIA: Figures 306–308. Vesica with two apical spines and a median process on shaft; left paramere splayed out.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Lee Kit and Hui Wai Ming.

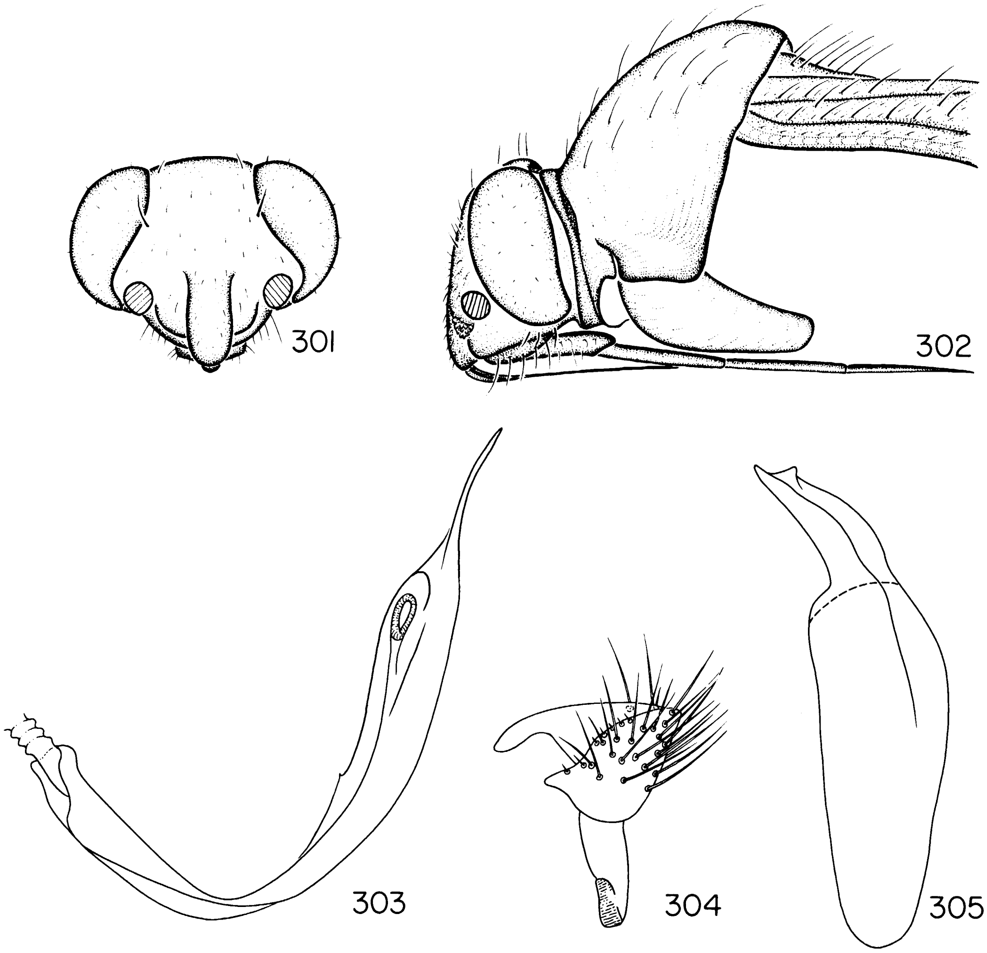
DISTRIBUTION: Figure 286. Hong Kong.

HOLOTYPE ♂: HONG KONG: Castle Peak, August 6–13, 1964, Lee Kit Ming and Hui Wai Ming collectors; deposited in the B. P. Bishop Museum, Honolulu.

Wygomiris taipokau, new species

Figures 286, 300, 309–311

DIAGNOSIS: Recognized by the generally mahogany-colored dorsum with a weakly contrasting lighter broad fascia across the hemelytra just posterior to the level of the apex of the scutellum, the moderate size, the large



Figs. 301–305. *Wygomiris indochinensis.* 301. Frontal view of head, ♂. 302. Lateral view of head and prothorax, ♂. 303. Vesica. 304. Left paramere. 305. Phallotheca.

eyes (fig. 300), and the form of the male genitalia (figs. 309–311).

Description: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture 2.50, width pronotum 1.02; general coloration mahogany, appendages and complete broad fascia on hemelytra just posterior to level of apex of scutellum somewhat lighter; membrane yellow-white between cunei, darker posteriorly (fig. 300).

Surface texture and vestiture as in generic description; pronotum and scutellum rather strongly shining; pronotum almost devoid of recumbent sericeous setae.

Eyes large, occupying nearly entire height of head, vertex relatively narrow; posterior margin of vertex nearly straight; eyes moderately emarginate at antennal insertions; genae very narrow; lateral pronotal margin sinuous, concave just posterior to pronotal collar, posterior margin broadly and smoothly rounded.

Male Genitalia: Figures 309–311. Vesica with a long, slender, curving apical spine and a small thumblike process at level of secondary gonopore; left paramere splayed out, anterior and posterior processes rather short.

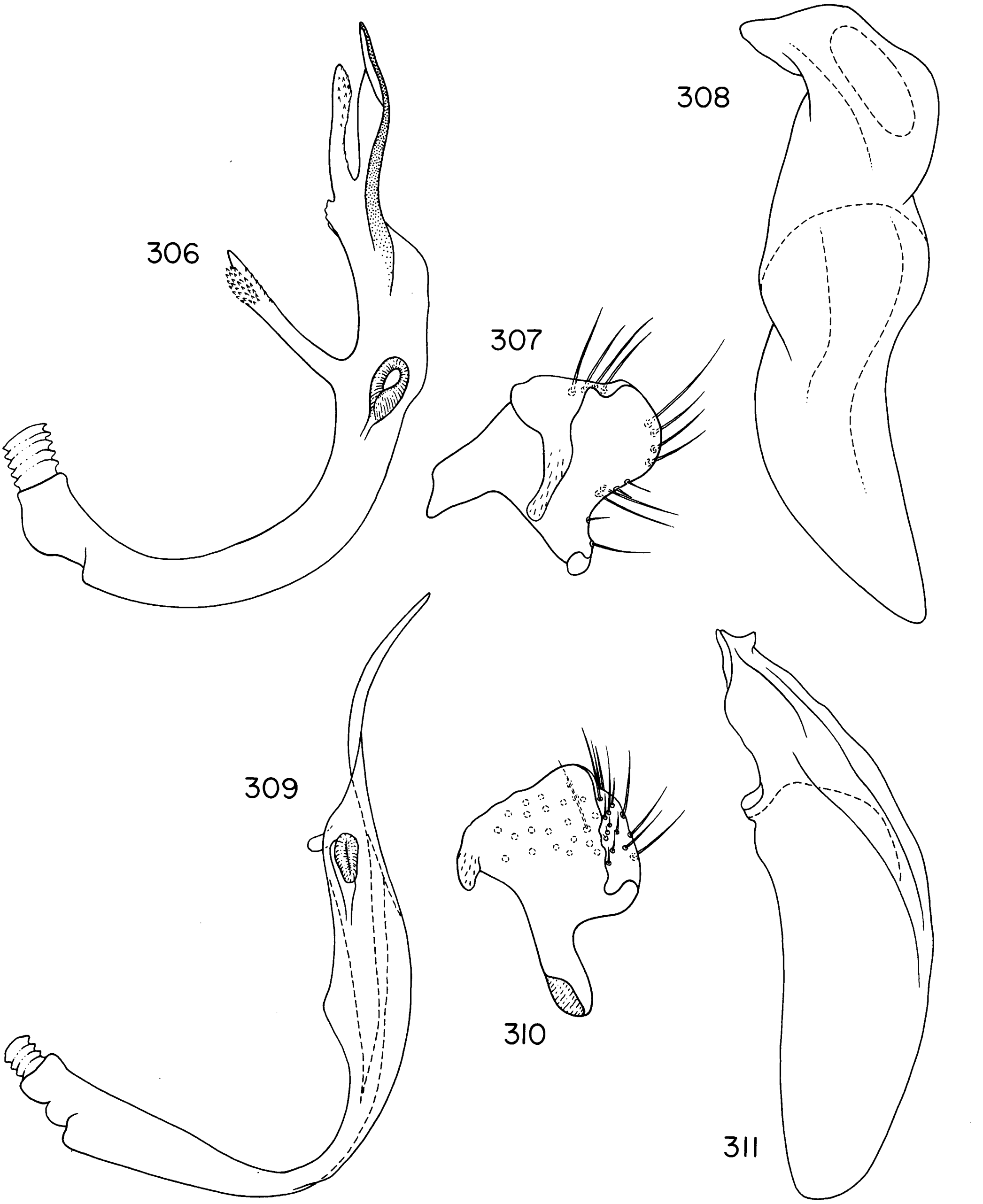
Female: Unknown.

Measurements: See Appendix.

Etymology: Named for the type locality; a noun in apposition.

Distribution: Figure 286. Hong Kong.

Holotype ♂: HONG KONG: Taipokau, June 5, 1964, W. J. Voss and Hui Wai Ming,



Figs. 306–311. *Wygomiris* spp. 306–308. *W. mingorum*. 306. Vesica. 307. Left paramere. 308. Phallotheca. 309–311. *W. taipokau*. 309. Vesica. 310. Left paramere. 311. Phallotheca.

light trap; deposited in the B. P. Bishop Museum, Honolulu.

ZARATUS DISTANT

Zaratus Distant, 1909c, p. 59; Schuh, 1974, p. 315.

Discussion: I have previously commented that *Zaratus* Distant must be closely related to *Pilophorus* (Schuh, 1974). In fact the single species (from the Nilgiri Hills, South India) now included in the genus, *repandus* Distant, which is deposited in the British Museum, appears to be closely related to (and possibly congeneric with) *Cleotomiroides*. This conclusion is based on the collar-like nature of the anterior pronotal margin, the mesoscutum being obscured by the pronotum, the obsolete cuneal incisure, the cuneal fracture at right angles to the cuneal margin, the broadly triangular cuneus, the small, light transverse claval fascia just posterior to the scutellum, and the at least weakly fleshy, apically convergent parempodia.

Reexamination of the metathoracic scent-gland evaporatory area of the type of *repandus* and acquisition of males will help confirm this tribal placement and relationship to other genera.

Zaratus repandus Distant

Zaratus repandus Distant, 1909c, p. 59.

DISCUSSION: See *Zaratus*.

TRIBE HALLODAPINI

ACRORRHINIUM NOUALHIER

Acrorrhinium Noualhier, 1895, p. 176; Schuh, 1974, p. 66.
Lutheriella Poppius, 1913, p. 248. NEW SYNONYMY.

DIAGNOSIS: *Acrorrhinium* species can be recognized by the prognathous head with a projecting spinelike frons (figs. 314, 329, 332), the broad, flat pronotal collar, and the male genital capsule usually with a small posteriorly directed spine; pretarsus as in figures 317 and 318; metafemoral trichobothria as in figure 319; range length apex tylus-cuneal fracture 3.50–4.70.

DISTRIBUTION: Figures 312–313. Africa, India, Sri Lanka, west to Hong Kong in the north, and northern Australia in the south.

ADDITIONAL SPECIMENS: Four specimens of *Acrorrhinium* in addition to those treated below are deposited in the Bishop Museum. One male from Viet Nam and one female from Thailand appear to belong to the same group of species as *A. hongkong*. A second female, from Thailand, is basically castaneous in coloration with a partial, white, transverse fascia mesially on the clavi; the frontal spine and shape of the head are similar to those in *oecopylloides*. The last specimen from Viet Nam is similar to *hongkong* in general appearance, but the eyes are much larger and cover most of the head in lateral view.

Acrorrhinium bismarkensis, new species
Figures 313, 314, 320–322

DIAGNOSIS: *Acrorrhinium bismarkensis* is allied to *monoceros* and *spicatus*. Recognized by the light yellow-brown coloration, with a weak to strongly castaneous marking at about the midpoint of the corium, the castaneous cuneus, the relatively small eyes, the very long first antennal segment (about two times width of head), and the structure of the male genitalia (figs. 320–322).

DESCRIPTION: Macropterous male. Large, elongate, length apex tylus-cuneal fracture 4.43, width pronotum 1.21; general coloration light yellow-brown; frontal spine, pronotal collar, interior surface of antennal segment one (and some other areas) distinctly reddish; clavus with a narrow white transverse fascia just posterior to scutellum; corium laterally and just posterior to midpoint and basal one-half of cuneus castaneous (fig. 314).

Entire body smooth, dull, covered with very short, reclining, inconspicuous pale setae.

Head more or less spherical in dorsal view; with a long, narrow, frontal spine; eyes relatively small, occupying about half of height of head in lateral view, posterior margin, nearly contiguous with anterior margin of pronotum (fig. 314); clypeus weakly flattened laterally; antennal segment one about two times as long as width of head; labium reaching well onto abdomen.

MALE GENITALIA: Figures 320–322.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in the Bismarck Archipelago.

DISTRIBUTION: Figure 313. Manus Island, Bismarck Archipelago.

HOLOTYPE ♂: PAPUA NEW GUINEA: *New Ireland Prov.*: Mussau Island, Talumalaus, January 20, 1962, at mercury vapor lamp, Noona Dan Expedition; deposited in the

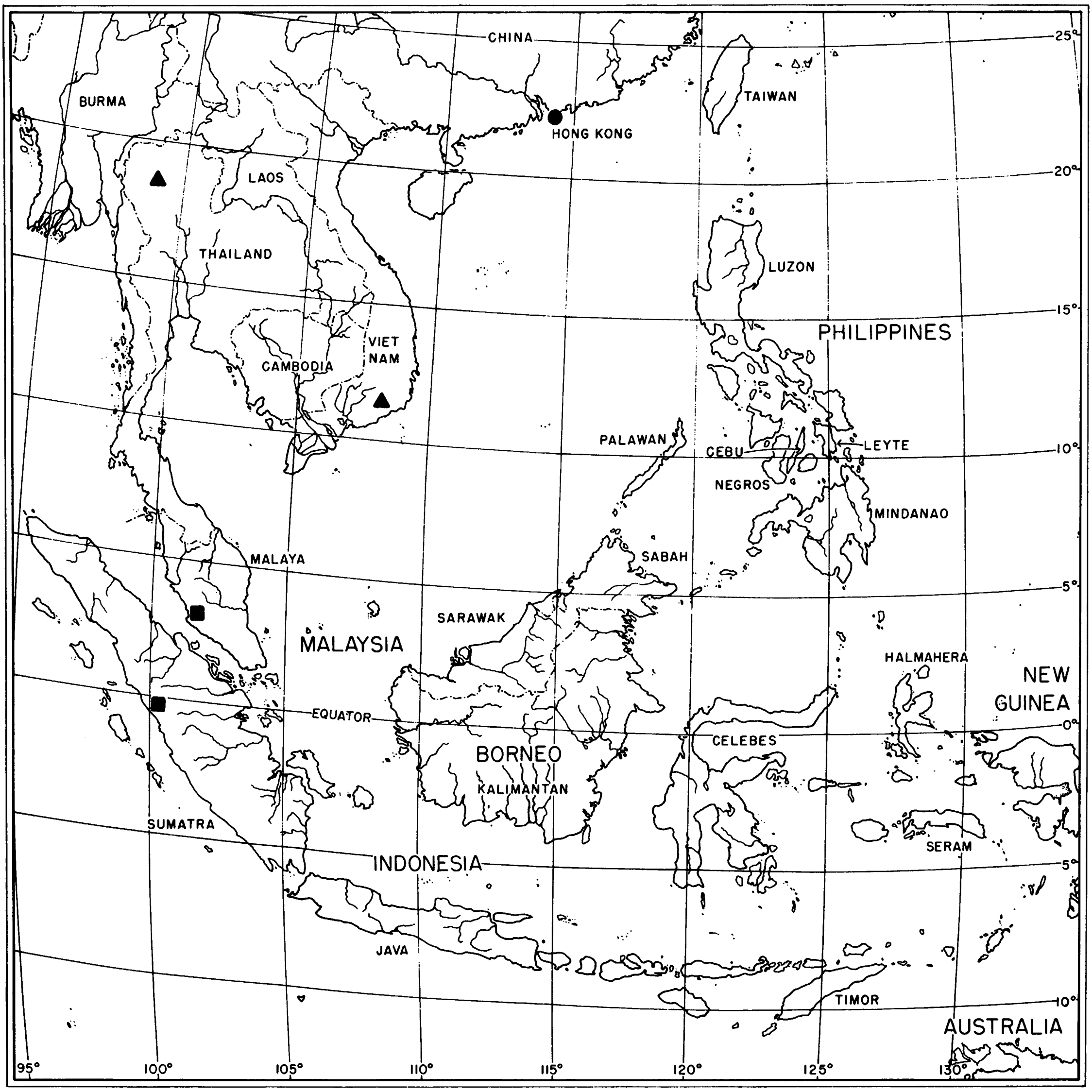

CHINA
BURMA
HONG KONG
TAIWAN
LAOS
THAILAND
LUZON
PHILIPPINES
VIET NAM
CAMBODIA
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
MALAYA
SABAH
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 312. Distribution of *Acrorrhinium hongkong* (●) and *A. monoceros* (■) (also from Sri Lanka); unidentified specimens (▲).

University Zoological Museum, Copenhagen.

PARATYPES: PAPUA NEW GUINEA: *Manus Prov.:* Manus Island, Momota, December 24, 1959 (Maa; Bishop), 1♂, 1♀.

Acrorrhinium hongkong, new species
Figures 312, 315, 317, 323–325

DIAGNOSIS: Recognized by the short frontal spine, length of antennal segment one about four-fifths of width of head, the eyes occupying the entire height of the head in lateral view, the weak elevation posteromesially on the pronotum, coloration, dimensions, and the structure of the male genitalia (figs. 323–325).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 3.83, width pronotum 1.40; general coloration light brown, endo- and exo-corium with distinct dark

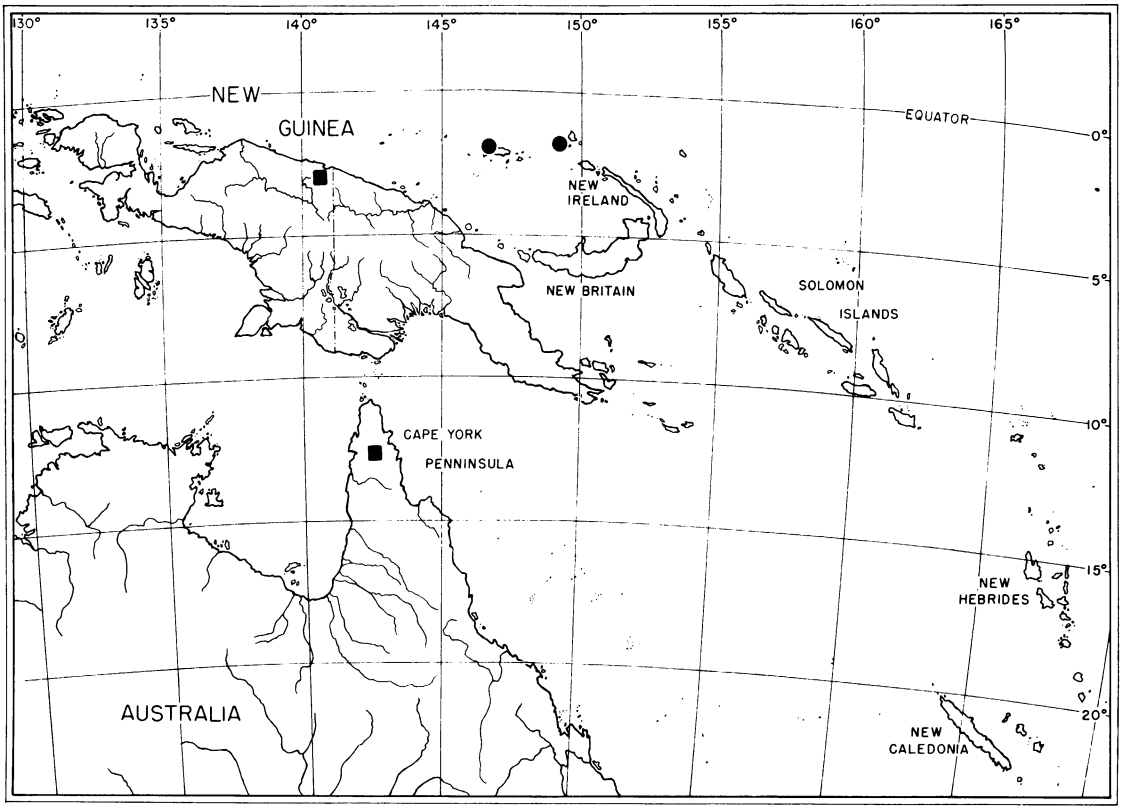


FIG. 313. Distribution of *Acrorrhinium* spp. *A. bismarkensis* (●) and *A. spicatus* (■).

brown lunate spots just posterior to midpoint of claval commissure (fig. 315); head below eyes and thorax laterally partially red; labium castaneous; abdomen dark brown.

Abdomen smooth, dull; dorsum covered with very short, recumbent, shining setae; antennae with very short neat vestiture.

Eyes very large, contiguous with pronotum posteriorly, occupying entire height of head in lateral view; vertex weakly longitudinally sulcate frons rounded, projecting anterior to eyes, terminating in a short spine; antennal segment one of length equal to about four-fifths of width of head, segments two, three, and four cylindrical, subequal in diameter; genae about as wide as tibial diameter; gula of length equal to tibial diameter; labium reaching to anterior margin of genital capsule; anterior lobe of pronotum distinctly narrow, barely wider than pronotal collar, separated from posterior lobe by a distinct impression; lateral margins of posterior lobe concave, humeral angles pointed, posterior margin convexly rounded laterally, concavely angulate across mesoscutum, with a weak but distinct elevation mesially at posterior margin; mesoscutum broadly exposed, scutellum weakly pyramidal; corial margins nearly straight; genital capsule with a short, blunt, bifid projection posteroventrally.

MALE GENITALIA: Figures 323–325.

FEMALE: Unknown.

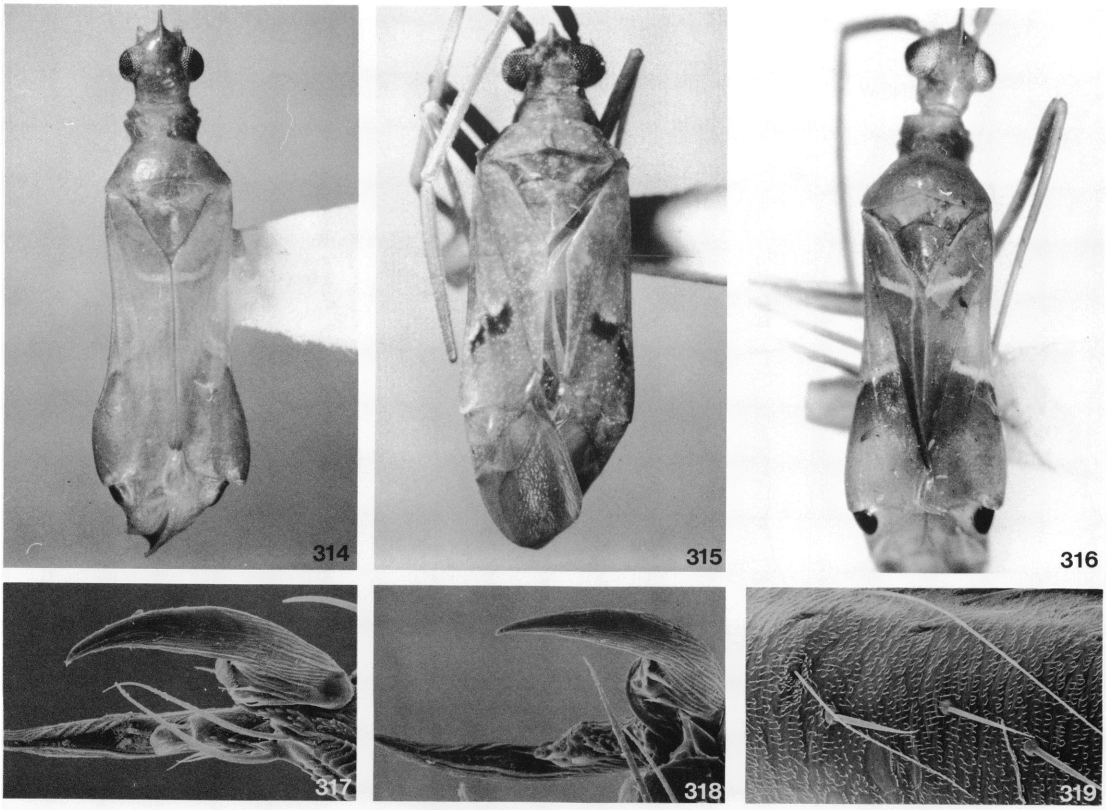
MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Hong Kong.

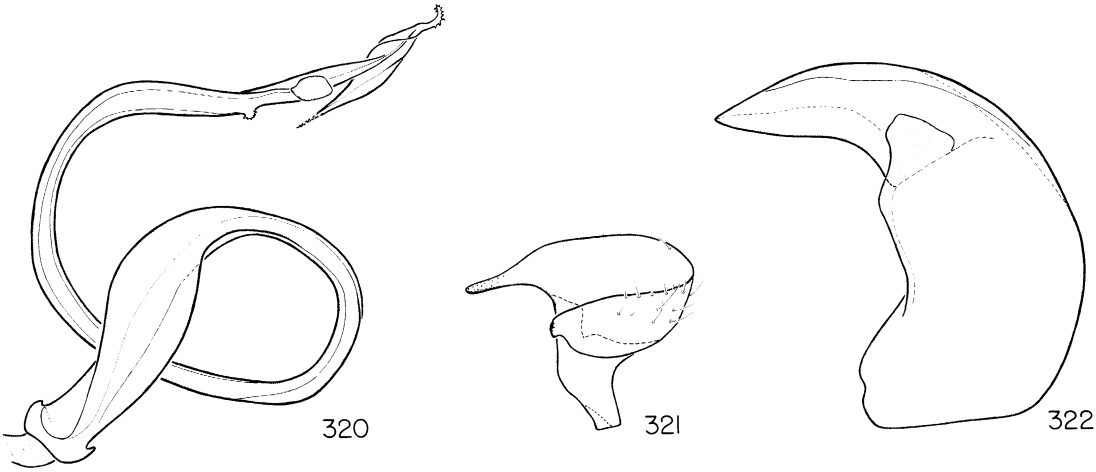
DISTRIBUTION: Figure 312. Hong Kong.

HOLOTYPE ♂: HONG KONG: Hong Kong Island, Pokfulan, 150 m., May 31, 1964, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

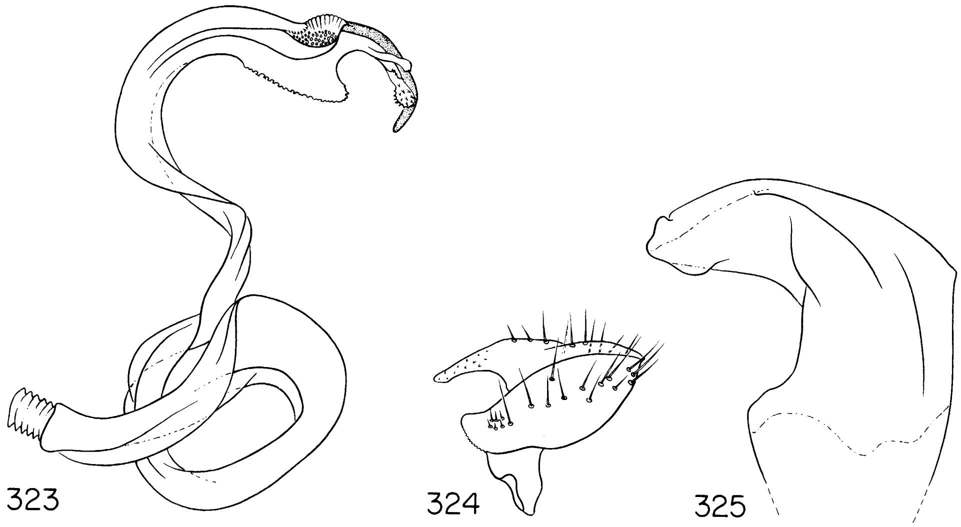
PARATYPES: Same data as holotype (Bishop), 1♂. HONG KONG: Sai Kung Station, October 27, 1964, light trap (Voss and Ming; Bishop), 1♂.



FIGS. 314–319. *Acrorrhinium* spp. 314. *A. bismarkensis*, ♂, paratype. 315. *A. hongkong*, holotype. 316. *A. monoceros*, holotype. 317. *A. hongkong*, pretarsus. 318, 319. *A.* prob. *monoceros*. 318. Pretarsus. 319. Metafemoral trichobothria.



FIGS. 320–322. *Acrorrhinium bismarkensis*, male genitalia. 320. Vesica. 321. Left paramere. 322. Phallotheca.



FIGS. 323–325. *Acrorrhinium hongkong,* male genitalia. 323. Vesica. 324. Left paramere. 325. Phallotheca.

Acrorrhinium monoceros (Distant)
Figures 312, 316, 318, 319, 326–328

Armachanus monoceros Distant, 1904, p. 479.
Acrorrhinium monoceros Schuh, 1974, p. 69.

DIAGNOSIS: *Acrorrhinium monoceros* can be separated from other species of the genus with greatest certainty by the form of the male genitalia, particularly the vesica, which has a brushlike structure apically, and a subapical spine near the secondary gonopore (fig. 326). Antennal segment one is about one and one-half times as long as the width of the head. The castaneous macula at about the midpoint of the corium is obsolete or poorly developed and not nearly so strongly indicated as in *spicatus* (compare figs. 316 and 331).

MALE GENITALIA: Figures 326–328.

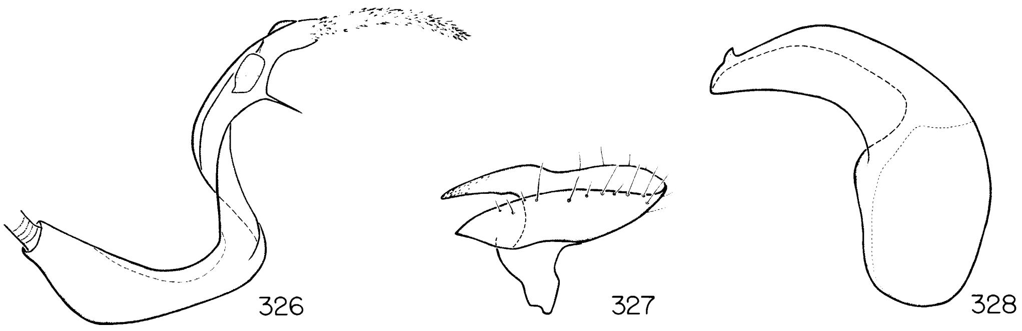
FEMALE: Macropterous. Similar to male except eyes somewhat smaller.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 312. Sri Lanka, Sumatra, Malaya.

MATERIAL EXAMINED: INDONESIA: *Sumatra:* Dolok Merangir (Diehl; AMNH), 1♀. MALAYSIA: *Malaya:* Selangor, Kuala Lumpur, May 2, 1924, at light (BMNH), 1♂.

DISCUSSION: This species was described by Distant (1904) from Sri Lanka on the basis



FIGS. 326–328. *Acrorrhinium* prob. *monoceros,* male genitalia. 326. Vesica. 327. Left paramere. 328. Phallotheca.

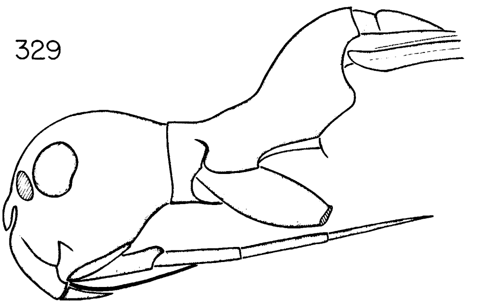


FIG. 329. *Acrorrhinium oecophylloides*, ♀, lateral view of head and prothorax.

of a single male specimen. I have not critically compared nor dissected the holotype, which is deposited in the British Museum (Nat. Hist.). It belongs to a group of closely related species including in the current treatment *bismarkensis* and *spicatus.*

Acrorrhinium nilgiriensis (Distant)

Armachanus nilgiriensis Distant, 1909c, p. 60.
Acrorrhinium nilgiriensis Schuh, 1974, pp. 68–69.

DISCUSSION: Described by Distant from Southern India, the only known material of this species is presumably deposited in the British Museum.

Acrorrhinium oecophylloides Poppius, new combination

Figure 329

Lutheriella oecophylloides Poppius, 1913, pp. 248–249.

DIAGNOSIS: Within the genus *Acrorrhinium, A. oecophylloides* can be recognized by the following combination of characters: pronotum strongly constricted and elongate just posterior to procoxae so as to form a neck somewhat narrower than the width of the pronotum as measured at the collar; head subspherical in outline with eyes (in female) removed from anterior pronotal margin by a distance equal to the two times the diameter of the eye; and frontal spine nearly as long as the diameter of an eye and strongly declivent (fig. 329).

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Sri Lanka.

MATERIAL EXAMINED: SRI LANKA: Peradeniya, December 14–18 (Luther; Helsinki), 1♀ (holotype).

DISCUSSION: The genus *Lutheriella* was described by Poppius to include the single species *L. oecophylloides* which he recorded as occurring with the ant *Oecophylla smaragdina.* He gave no indication as to the possible relationship of *Lutheriella.* Examination of the holotype indicates, however, that *Lutheriella* is a synonym of *Acrorrhinium,* the latter name having priority, new synonymy.

Nonetheless, *oecophylloides* appears to be distinct from all other known species of *Acrorrhinium.* The only known specimen is a macropterous female; a male would be expected to have somewhat larger eyes but otherwise the specimen that Poppius examined has all of those characteristics used in defining the genus *Acrorrhinium,* including the distinctive markings on the hemelytra and the prominent frontal spine on the head. This species is distinctive in that the frontal spine is decurved and the pronotum is constricted and necklike behind the procoxae.

Acrorrhinium pusae Ballard

Figure 330

Armachanus pusae Ballard, 1927, pp. 67–68, fig. 11.
Acrorrhinium pusae Schuh, 1974, pp. 68–69.

DISCUSSION: Described by Ballard on the basis of a single female specimen from Pusa, India, which is deposited in the British Museum (Nat. Hist.). Apparently related to *rhinoceros* and *hongkong.* I have not studied this species in detail.

Acrorrhinium rhinoceros (Distant)

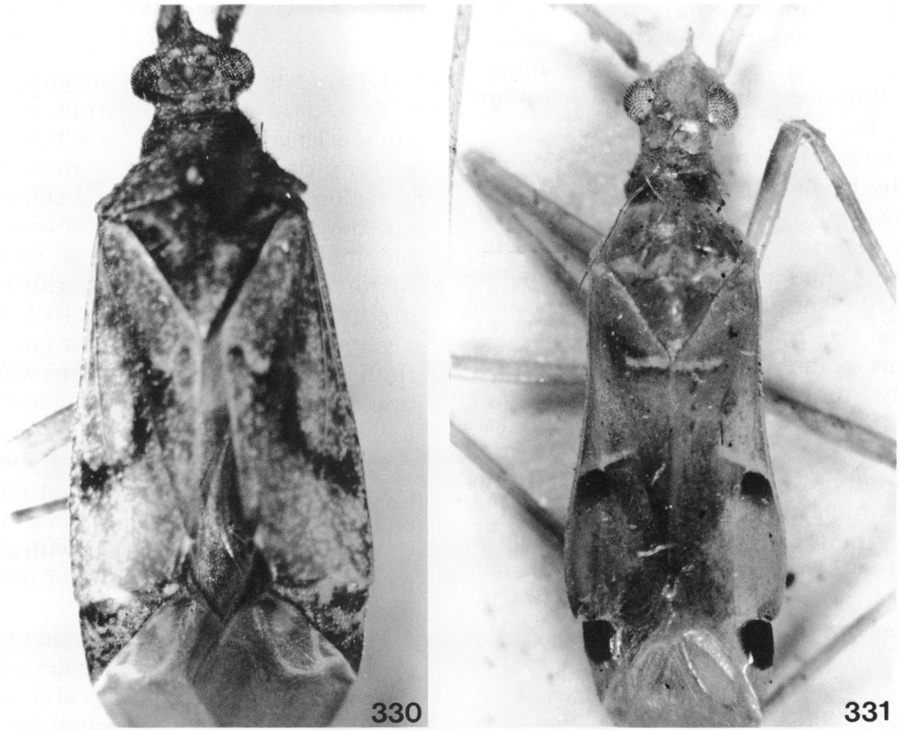
Cinnamus rhinoceros Distant, 1909a, p. 441.
Acrorrhinium rhinoceros Schuh, 1974, pp. 68–69.

DISCUSSION: Described by Distant from Sri Lanka on the basis of a single female specimen which is deposited in the British Museum. Apparently related to *hongkong* and *pusae.* I have not studied the species in detail.

Acrorrhinium spicatus (Distant)

Figures 313, 331–336

Armachus spicatus Distant, 1904, p. 203.
Acrorrhinium spicatus Schuh, 1974, p. 69.



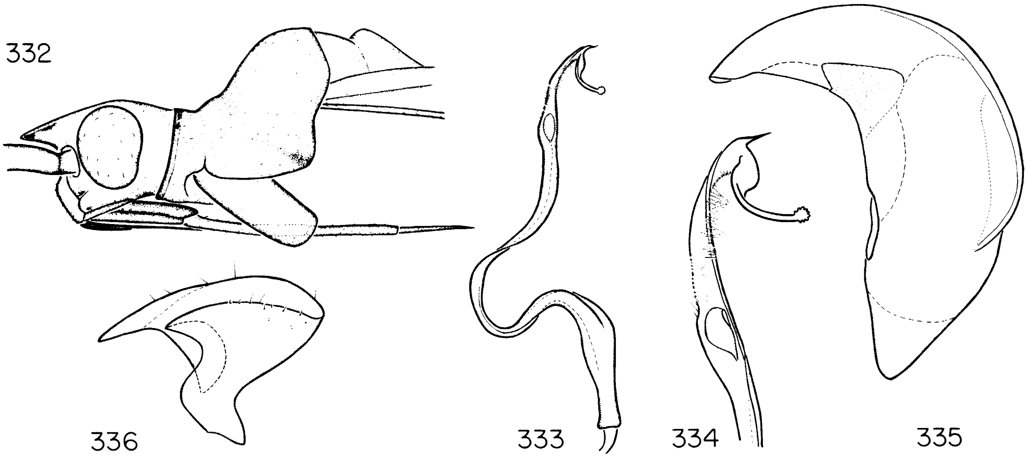
FIGS. 330, 331. *Acrorrhinium* spp. 330. *A. pusae,* holotype. 331. *A. spicatus,* holotype.

DIAGNOSIS: *Acrorrhinium spicatus* can be separated from other members of the genus by the reddish coloration of the pronotal collar and the presence of a castaneous cuneus and the castaneous macula laterally and just posterior to the midpoint of the corium (fig. 331) and by the structure of the male genitalia (figs. 333–336).

MALE GENITALIA: See figures 333–336.

DISTRIBUTION: Figure 313. Northern Australia, New Guinea.

SPECIMENS EXAMINED: AUSTRALIA:



FIGS. 332–336. *Acrorrhinium* prob. *spicatus.* 332. Lateral view of head and prothorax. 333. Vesica. 334. Detail of apex of vesica. 335. Phallotheca. 336. Left paramere.

Queensland: Wenlock, Batavia River, 500 feet, July 27, 1948 (Tate; AMNH), 1♂. INDONESIA: *Irian Jaya:* Cyclops Mountains, Sabron, 930 feet, June 1936 (Cheesman; BMNH), 1♀.

DISCUSSION: *Acrorrhinium spicatus* was described by Distant from the Adelaide River in northwest Australia. The holotype, a female, is deposited in the British Museum (Nat. Hist.) and agrees closely in all characters with the specimens listed above. Upon dissecting the male genitalia of available specimens from Australia it has become apparent that more than one species of *Acrorrhinium* is present in northern Australia and possibly in New Guinea, and that without further material it will be impossible to determine which male specimens are conspecific with the type *spicatus.* The drawings of the head and prothorax (fig. 332) and male genitalia (figs. 333–336) are made from the Australian specimen.

ALLOEOMIMUS REUTER

Alloeomimus Reuter, 1910b, p. 81; Wagner, 1973, p. 323.

DIAGNOSIS: Recognized by the relatively small size, the nearly spherical prognathous head, the relatively small eyes removed from the anterior margin of the pronotum by a distance equal to about one-third the length of an eye in dorsal view, the broad, flat pronotal collar, the very broad triangular white fascia on the corium and clavus (fig. 337), and the form of the male genitalia (figs. 341–343).

MALE GENITALIA: Vesica elongate slender, curving and twisted, secondary gonopore well developed, distinctly removed from apex; phallotheca curving, more or less parallel sided; left paramere boat-shaped, large.

FEMALE: Brachypterous. Eyes somewhat smaller than in male, pronotum more nearly parallel-sided, hemelytra reduced, covering about two-thirds of abdomen; membrane wanting.

FEMALE GENITALIA: Not examined.

TYPE SPECIES: *Systellonotus unifasciatus* Reuter.

DISTRIBUTION: Eastern Mediterranean, Indochina, Java.

Alloeomimus muiri, new species

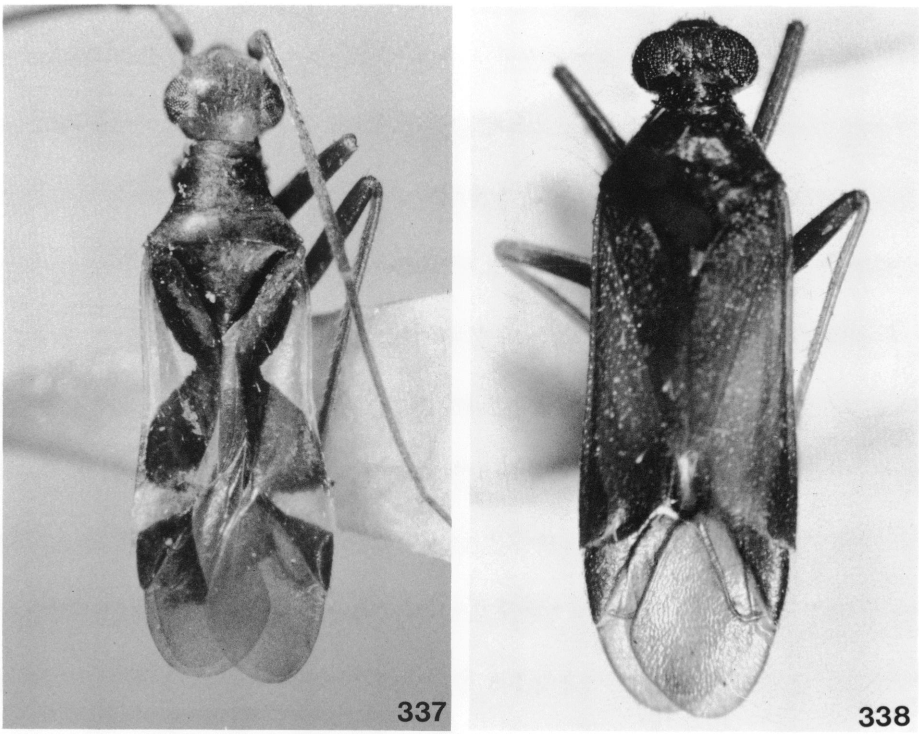
Figures 337, 339–343

DIAGNOSIS: See generic diagnosis.

DESCRIPTION: Macropterous male. Small, antlike, length apex tylus-cuneal fracture 2.46, width pronotum 0.80; pattern of coloration "Plagiorrhama-like"; general coloration castaneous, except for hemelytra with a grayish bloom; hemelytra somewhat more brown than remainder of body; anterior two-thirds of corium and exterior one-half of clavus with a very broad, white triangular fascia and corium broadly adjacent to cuneus white; membrane pale to weakly infumate; antennal segment one and metacoxae pale (fig. 337).

Entire body smooth, generally with a dull gray bloom; dorsum with scattered, short, erect pale pubescence; antennae with very short, neat vestiture; all tibiae with a few weak, pale spines and several rows of minute spicules.

Head more or less spherical in dorsal view, eyes small, removed from anterior pronotal margin by distance equal to about one-third length of eye; eyes occupying slightly more than one-half of height of head in lateral view (fig. 340); antennae inserted near ventral margin of eye, fossae distinctly removed from nearly straight anterior margin of eye; buccal cavity elongate ovoid; gula long, sloping; antennal segment one about as long as height of eye, segments two, three, and four slender, two of slightly greater diameter than three and four; labrum just reaching apex of metacoxae; pronotum with anterior margin in the form of a broad, flat collar, demarcated posteriorly by a finely impressed line; calli obsolete, pronotum weakly elevated posteriorly, lateral margins concave, posterior margin excavated across mesoscutum; mesoscutum broadly exposed, indistinctly separated from scutellum, distinctly elevated; scutellum weakly swollen; clavi distinctly declining laterally, lateral corial margin sinuous, not reflexed ventrally; cuneal fracture angled anteromesially, cuneal incisure obsolete; abdomen somewhat narrowed basally, rather deep, genital capsule moderately large, occupying slightly more than one-fourth of abdominal length; femora elongate, weakly flattened and nearly straight; tibiae cylindrical; claws elongate, smoothly curved, slightly



FIGS. 337, 338. 337. *Alloeomimus muiri,* holotype. 338. *Azizus basilicus,* holotype.

broadened basally, pulvilli small, parempodia setiform.

MALE GENITALIA: Figures 341–343.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for F. Muir.

DISTRIBUTION: Indochina, Java.

HOLOTYPE ♂: INDONESIA: *Java:* Pekalongau, F. Muir collector; deposited in the California Academy of Sciences, San Francisco (Type No. 14255).

PARATYPES: Same data as holotype (CAS), 2♀♀. LAOS: *Vientianne:* June 2–4, 1960, light trap (Quate and Quate; Bishop), 1♂; May 9, 1965 (Ashlock; Bishop), 1♂. THAILAND: Klang Rangsit, June 6, 1926 (Ladell; BMNH), 2♂♂.

AZIZUS DISTANT

Azizus Distant, 1910a, p. 11; Schuh 1974, pp. 80–81.

DISCUSSION: See *Azizus basilicus* Distant.

Azizus basilicus Distant

Figure 338

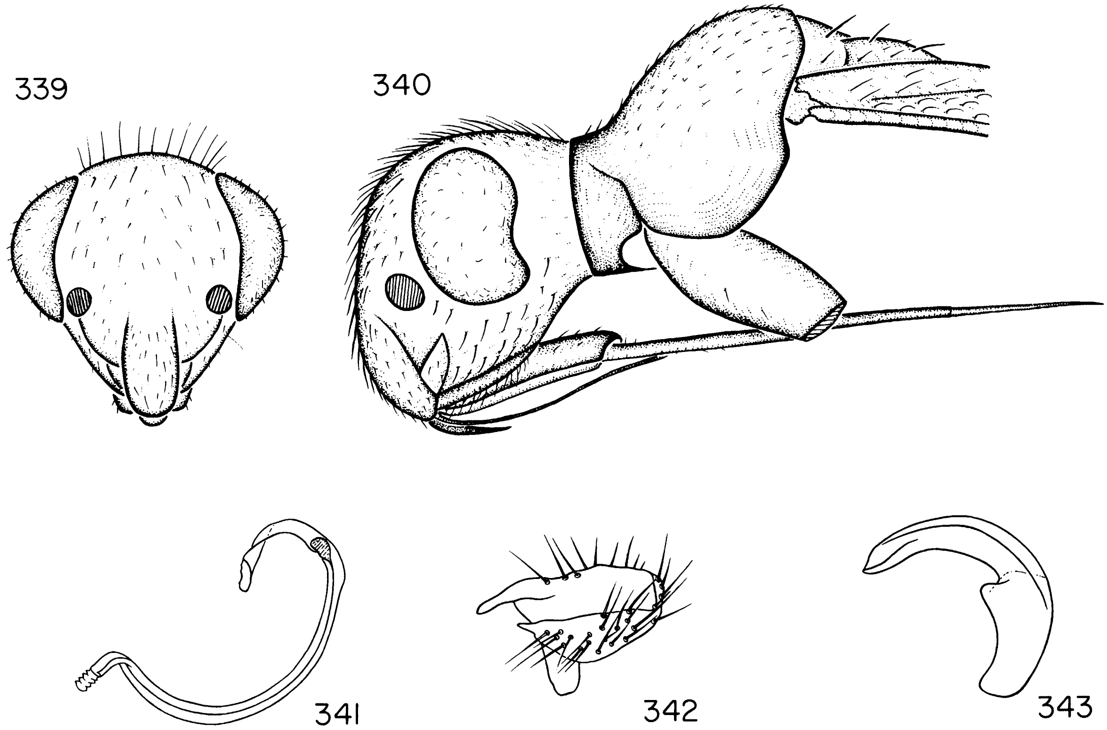
Azizus basilicus Distant, 1910, p. 11.

DISCUSSION: Originally described with only a single included species, *Azizus* now contains four possibly unrelated species (Schuh, 1974). *Azizus basilicus,* the type of the genus, looks very much like a *Trichophorella* species. *Azizus basilicus* is presently known only from the type specimen. Because I have not examined the type of *basilicus* in detail, and because its movement would place *Azizus* in generic synonymy and leave the remaining species, which may not be conspecific with *basilicus,* without a valid generic placement, I have left this problem to the first person to undertake revisionary work in the Hallodapini.

CLAPMARIUS DISTANT

Clapmarius Distant, 1904, p. 419.

DIAGNOSIS: Recognized by the presence of a wide flattened pronotal collar, the longi-



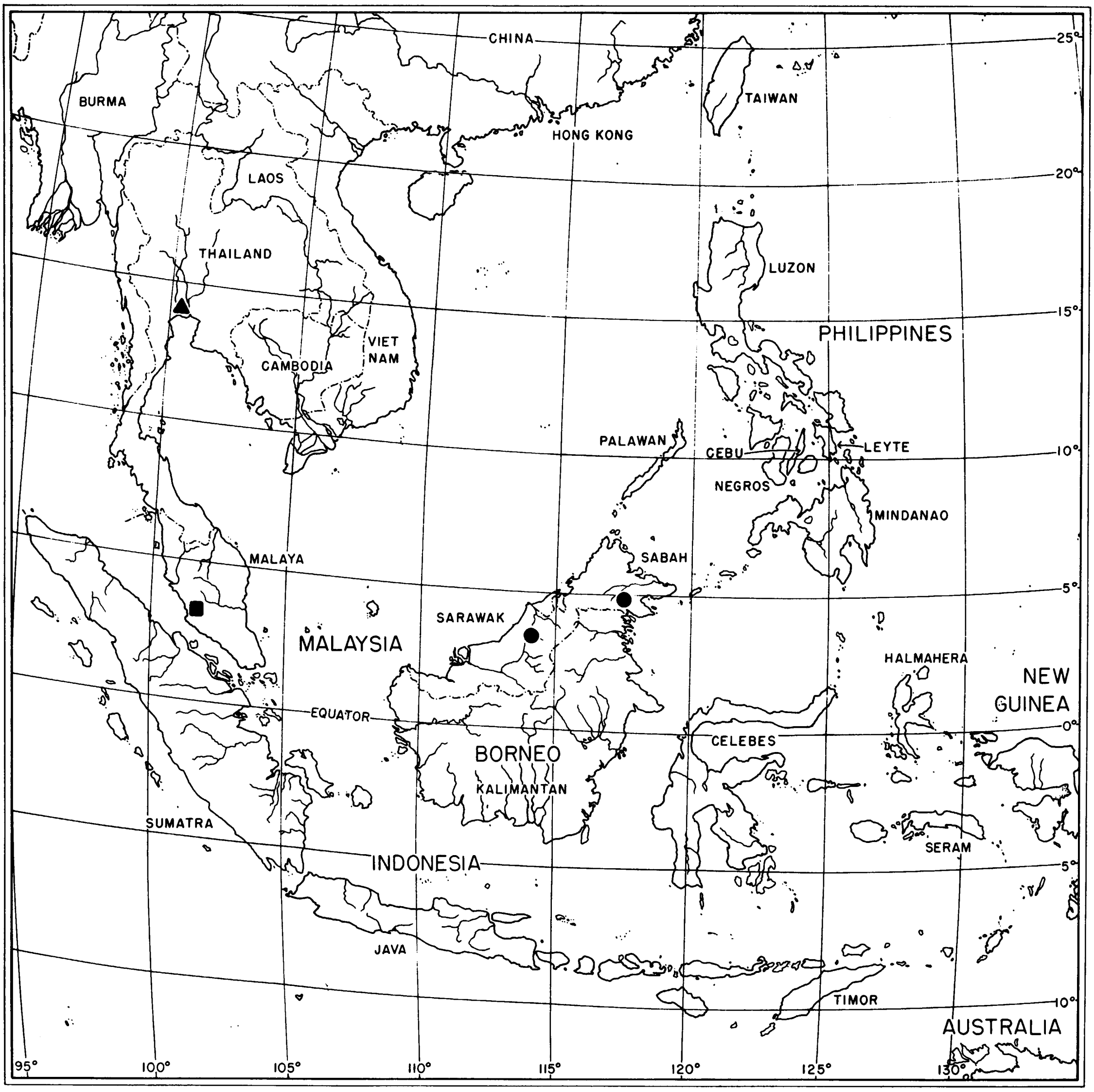
FIGS. 339–343. *Alloeomimus muiri.* 339. Frontal view of head. 340. Lateral view of head and prothorax. 341. Vesica. 342. Left paramere. 343. Phallotheca.

tudinally sulcate vertex, the lamellate first antennal segment, the width of which is nearly one-half the total length of the segment, a moderately to strongly ventrally produced prosternal xyphus, the setiform parempodia, and the structure of the male genitalia.

DESCRIPTION: Medium-sized, somewhat stocky, range length apex tylus-cuneal fracture 2.76–3.50, range width pronotum 1.10–1.30; pronotum constricted anteriorly (fig. 363), first antennal segment broadly lamellate (figs. 356, 363); general coloration brown or reddish brown.

Body surface, dull or very weakly shining, pronotum and scutellum weakly rugose; dorsum covered with long, pale, suberect common setae; legs and antennal segment one with many erect or semierect setae; antennal segments two, three, and four with short, neat, decumbent vestiture, segment two with some longer suberect hairs.

Head projecting anteriorly, clypeus prominent, barely visible from above and somewhat keel-like (figs. 345, 351, 355, 362); frons sometimes slightly protuberant above clypeus; vertex sulcate longitudinally; eyes nearly hemispherical, almost contiguous with anterior margin of pronotum, slightly larger in the male than in female; gula short, somewhat longer than diameter of antennal segment two, slightly inclined; labium reaching to about apex of mesocoxae; first antennal segment strongly flattened lamellate, width about equal to width of vertex, ridged mesially, antennal segments two, three, and four cylindrical, segments three and four subequal in diameter, about one-half diameter of segment two; pronotum strongly narrowed anteriorly with the wide flattened anterior collar, elevated posteriorly; prosternal xyphus weakly to strongly produced ventrally (figs. 355, 362); mesoscutum broadly exposed, separated from scutellum by a distinct transverse suture; scutellum weakly rounded transversely, lateral margin of corium very weakly sinuous, cuneus inset basally, cuneal fracture weakly directed anteromesially; membrane with two conspicuous cells, pos-


CHINA
BURMA
TAIWAN
HONG KONG
LAOS
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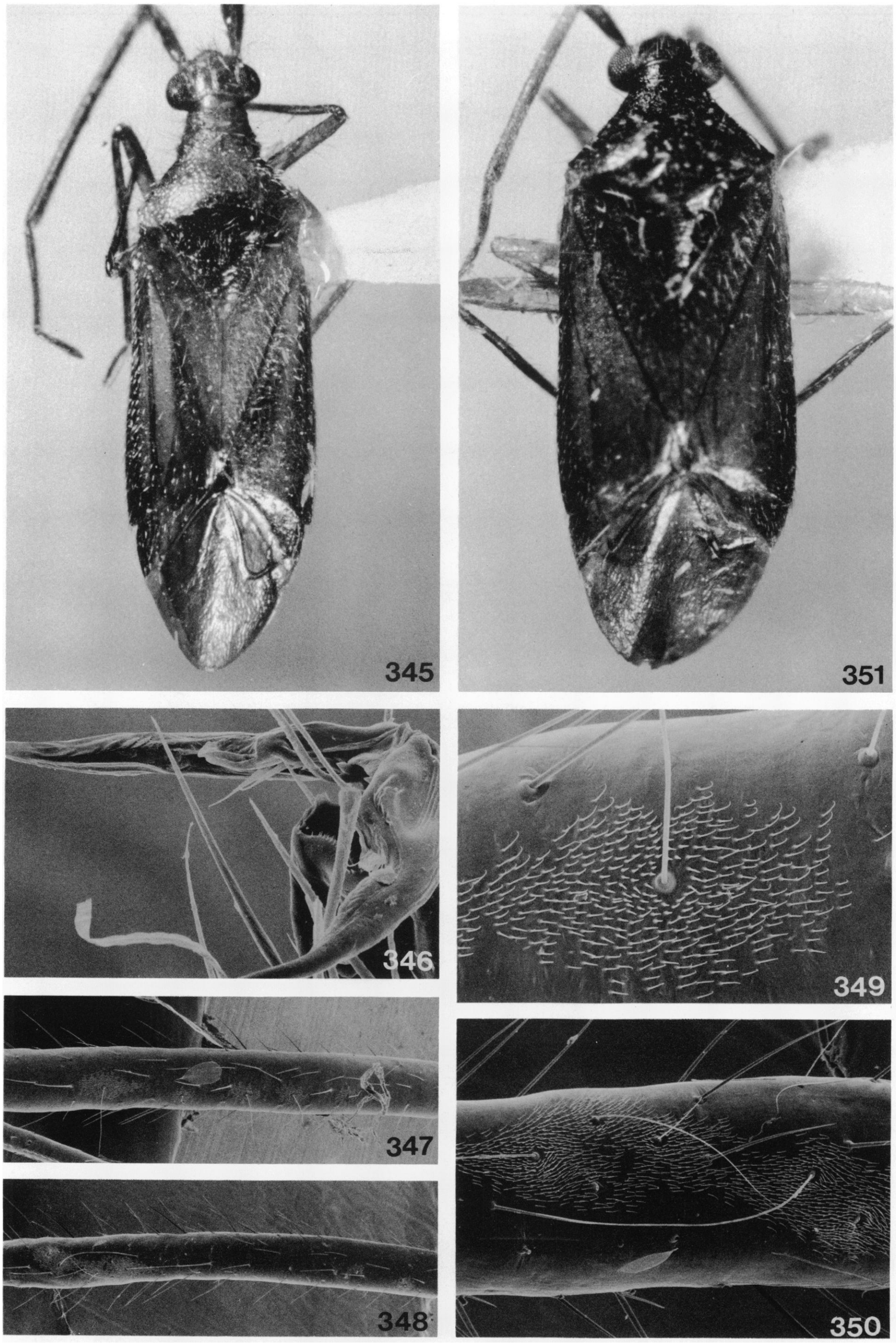
CEBU
LEYTE
NEGROS
MINDANAO
MALAYA
SABAH
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 344. Distribution of *Clapmarius* spp. *C. kalabakan* (●); *C. kualalumpur* (■); *C. thailandana* (▲); see also Sri Lanka for *C. turgidus*.

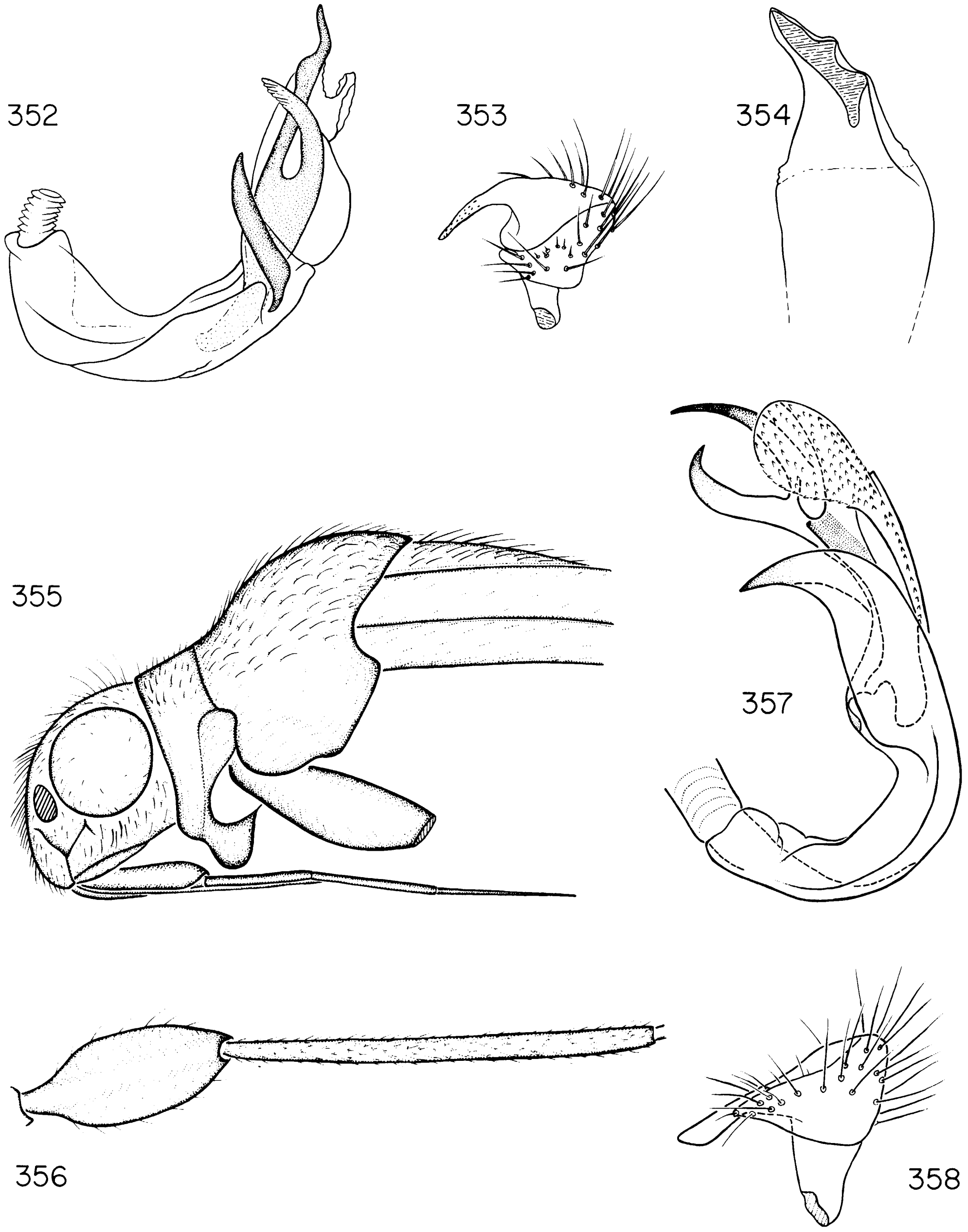
teromesial angle of cells broadly rounded; all femora rather slender, more or less cylindrical; trichomae of femoral trichobothria conspicuous under dissecting microscope; meso- and meta-femoral trichobothria as in figures 347–350; all tibiae with several rows of minute black spicules and numerous, long, semierect pale or brown spines; claws gently curved, pulvilli subbasal, small, parempodia setiform (fig. 346).

MALE GENITALIA: Capsule phyline in aspect (figs. 364, 365); vesica nearly straight or rather strongly bent, short stocky, apically with several rather strongly sclerotized projections; secondary gonopore conspicuously developed in most species; left paramere typically phyline, boat-shaped; right paramere small and leaf-shaped; phallotheca without strong right angle bend.

FEMALE GENITALIA: Not examined.



FIGS. 345–351. *Clapmarius* spp. 345–351. *C. kalabakan.* 345. Dorsal view, ♂, paratype. 346. Pretarsus. 347. Mesofemur, showing trichobothria. 348. Metafemur, showing trichobothria. 349. Detail of mesofemoral trichobothrium. 350. Detail of metafemoral trichobothria. 351. *C. thailandana,* holotype.



FIGS. 352–358. *Clapmarius* spp. 352–354. *C. kalabakan,* male genitalia. 352. Vesica. 353. Left paramere. 354. Phallotheca. 355–358. *C. kualalumpur.* 355. Lateral view of head and prothorax. 356. Antennal segments one and two. 357. Vesica. 358. Left paramere.

TYPE SPECIES: *Clapmarius turgidus* Distant.

DISTRIBUTION: Sri Lanka, Peninsular Malaya, Thailand, and northern Borneo.

DISCUSSION: In the "Fauna of British India" Distant (1904) treated *Clapmarius* as a member of the tribe Herdoniaria within the Mirinae. This placement was predicated on the presence of a longitudinally sulcate vertex, a character upon which Distant placed a great emphasis. Later, Carvalho (1952, 1959) also placed *Clapmarius* in the Mirinae, but in the tribe Mirini. One can only assume that Carvalho interpreted the parempodia as being lamellate and divergent apically. However, close examination of several specimens of *Clapmarius* representing at least four species indicates that in fact the parempodia are setiform and parallel. Also the male genitalia are typically phyline with a strongly sclerotized vesica, a boat-shaped left paramere and a phallotheca not attached to the phallobase. Within the Phylinae the affinities of *Clapmarius* can be determined by the flattened pronotal collar and sulcate vertex which relate the genus to the group of genera including *Acrorrhinium* within the Hallodapini.

ADDITIONAL SPECIMENS: In addition to the material discussed below, the following specimens, probably all representing undescribed species, exist in collections: 1♀, Kuala Lumpur, Malaysia (BMNH); 1♂, 19 km. N of Kalabakan, Tawau Residency, Sabah Prov., Malaysia.

Clapmarius kalabakan, new species

Figures 344, 345, 350, 352–354

DIAGNOSIS: Recognized by the golden brown coloration, the relatively broadly expanded first antennal segment, the frons slightly bulging above the cuneus, and the form of the male genitalia (figs. 352–354).

DESCRIPTION: Length apex tylus-cuneal fracture 3.46, width pronotum 1.24; general coloration golden brown; antennal segments two, three, and four and all tibiae, thoracic and abdominal venter castaneous.

Surface texture and vestiture as in generic description.

Antennal segment one very broad; frons weakly projecting above tylus; prosternal xyphus broad and distinctly produced ventrally (as in fig. 355); gula about as long as diameter of antennal segment two; otherwise as in generic description.

MALE GENITALIA: Figures 352–354.

FEMALE: As in male, except as indicated in generic description.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence near Kalabakan, Sabah, Malaysia; a noun in apposition.

DISTRIBUTION: Figure 344. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, 19 km. N of Kalabakan, October 10, 1962; K. J. Kuncheria collector; deposited in B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but also October 18 and 30 and Y. Hirashima collector (AMNH, Bishop), 2♂♂, 1♀. MALAYSIA: *Sarawak Prov.:* foot of Mt. Dulit, junction of Tinjar and Lejok Rivers, August 25, 1932, light trap (B. M. Holoby and A. W. Moore; BMNH), 1♂.

Clapmarius kualalumpur, new species

Figures 344, 355–358

DIAGNOSIS: Recognized by light brown coloration with strongly reddish markings on the exocorium and cuneus, the shape of antennal segment one (fig. 356), and the structure of the male genitalia.

DESCRIPTION: Macropterous male. Light brown, mesoscutum, scutellum, and metathorax laterally deep red or castaneous, exocorium, cuneus, and edge of antennal segment one strongly reddish.

Surface texture and vestiture as in generic description.

Gula slightly longer than diameter of antennal segment two; labium reaching to about apex of mesocoxae; antennal segment one moderately broad and nearly rectangular; prosternal xyphus strongly produced ventrally (fig. 355).

MALE GENITALIA: Figures 357 and 358.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

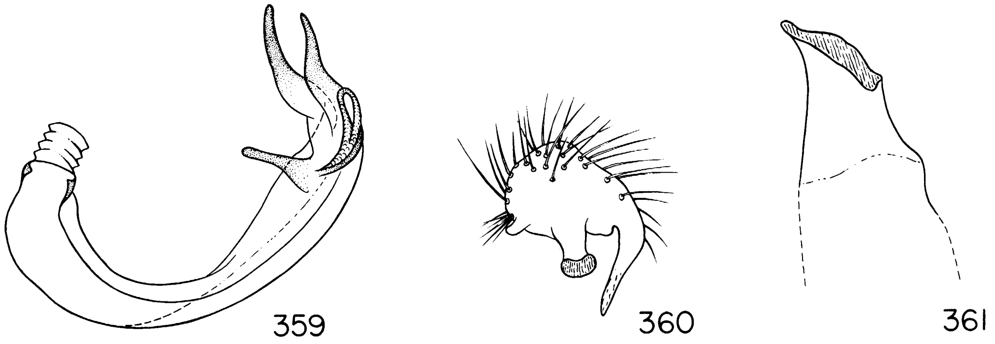
DISTRIBUTION: Figure 344. Malaya.

HOLOTYPE ♂: MALAYSIA: *Malaya:* Kuala Lumpur, May 12, 1935, H. M. Pendlebury collector; deposited in the British Museum (Nat. Hist.).

Clapmarius thailandana, new species

Figures 344, 351, 359–361

DIAGNOSIS: Recognized by the castaneous body, yellow-white coxae and femora, the



FIGS. 359–361. *Clapmarius thailandana,* male genitalia. 359. Vesica. 360. Left paramere. 361. Phallotheca.

frons sloping smoothly to base of tylus, antennal segment one broadly ovoid, and the form of the male genitalia (figs. 359–361).

DESCRIPTION: Length apex tylus-cuneal fracture 2.76, width pronotum 1.15; body castaneous, clypeus slightly lighter; all antennal segments, distal one-third of all femora, and all tibiae and tarsi reddish; all coxae trochanters and proximal one-third of all femora yellow-white.

Surface texture and vestiture as in generic description.

Antennal segment one broadly ovate; frons smoothly sloping to base of tylus; prosternal xyphus rounded and distinctly projecting ventrally; gula about as long as diameter of antennal segment two; otherwise as in generic description.

MALE GENITALIA: Figures 359–361.

FEMALE: Macropterous. As in male except as indicated in generic description.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Thailand.

DISTRIBUTION: Figure 344. Thailand.

HOLOTYPE ♂: THAILAND: Bangkok, 1 m., December 4, 1957, light trap, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

ADDITIONAL SPECIMEN: THAILAND: Banna, Chewang near Nabon, 70 m., September 5, 1958, light trap (Gressitt; Bishop), 1♀.

Clapmarius turgidus Distant

Figures 362–368

Clapmarius turgidus Distant, 1904, p. 420.

DIAGNOSIS: Recognized by the flattened first antennal segment which is tapered distally (fig. 363), dimensions, and by the form of the male genitalia, particularly the vesica (fig. 367).

MEASUREMENTS: See Appendix.

MALE GENITALIA: Figures 364–368.

SPECIMENS EXAMINED: Ceylon (Green); Distant Coll. 1911-383 (BMNH), 1♂ (holotype).

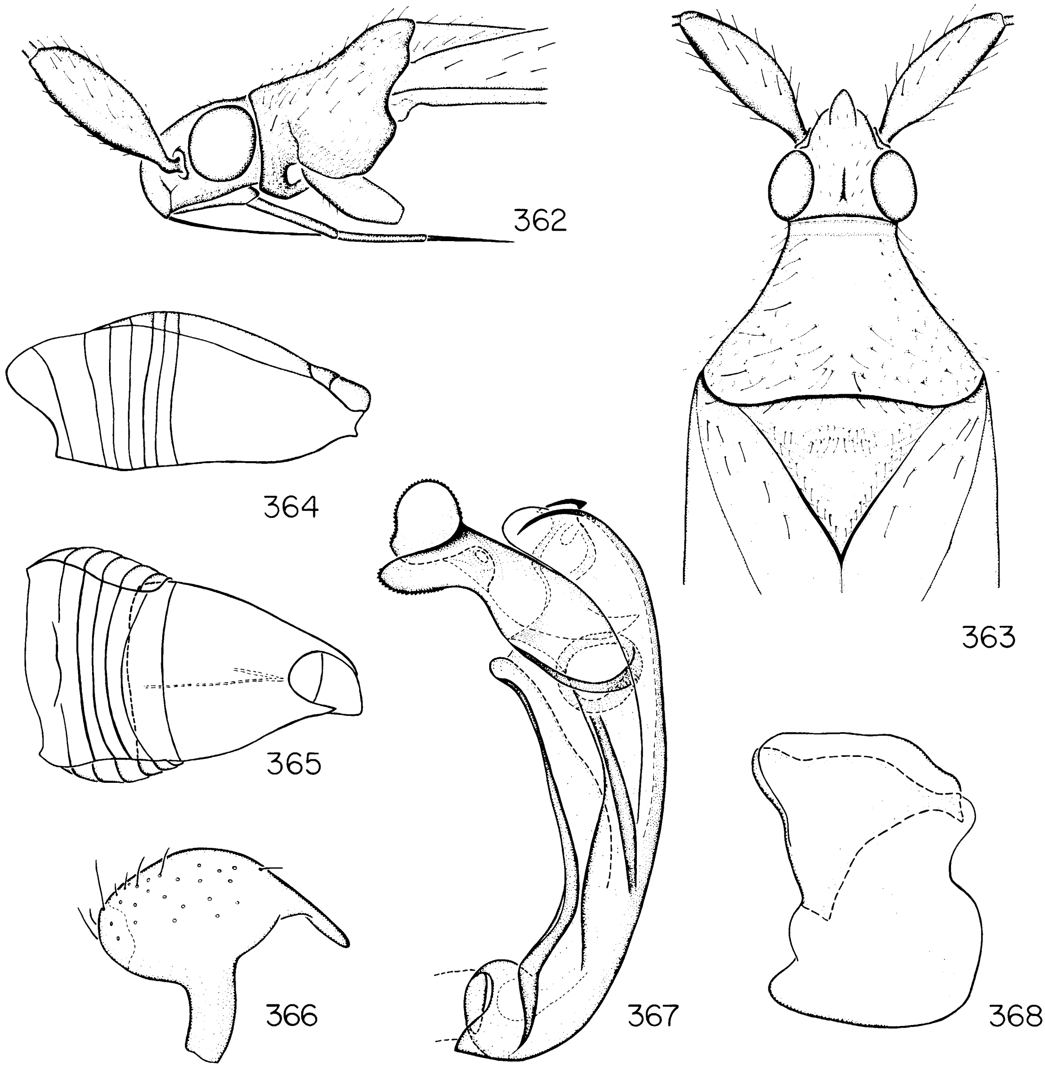
HALLODAPUS FIEBER

Hallodapus Fieber 1858, p. 307; Schuh, 1974, pp. 91–94.

Trichofulvius Poppius, 1909, pp. 19, 41; Carvalho, 1978, p. 125. NEW SYNONYMY.

DIAGNOSIS: Recognized by the rather small size, the basically brown coloration with contrasting white maculae on the corium and/or clavus, the prognathous head with a more or less horizontal vertex with a weak carina on the posterior margin, the posterior margin of the eyes contiguous with the flattened, collar-like anterior margin of the pronotum, a stridulatory device involving the inner surface of the metafemur and the costal margin of the corium, the setiform parempodia, and the structure of the male genitalia with the elongate to very long vesica with a well-developed secondary gonopore, and the left paramere enlarged and usually densely covered with heavy setae (see also Schuh, 1974, pp. 91–92).

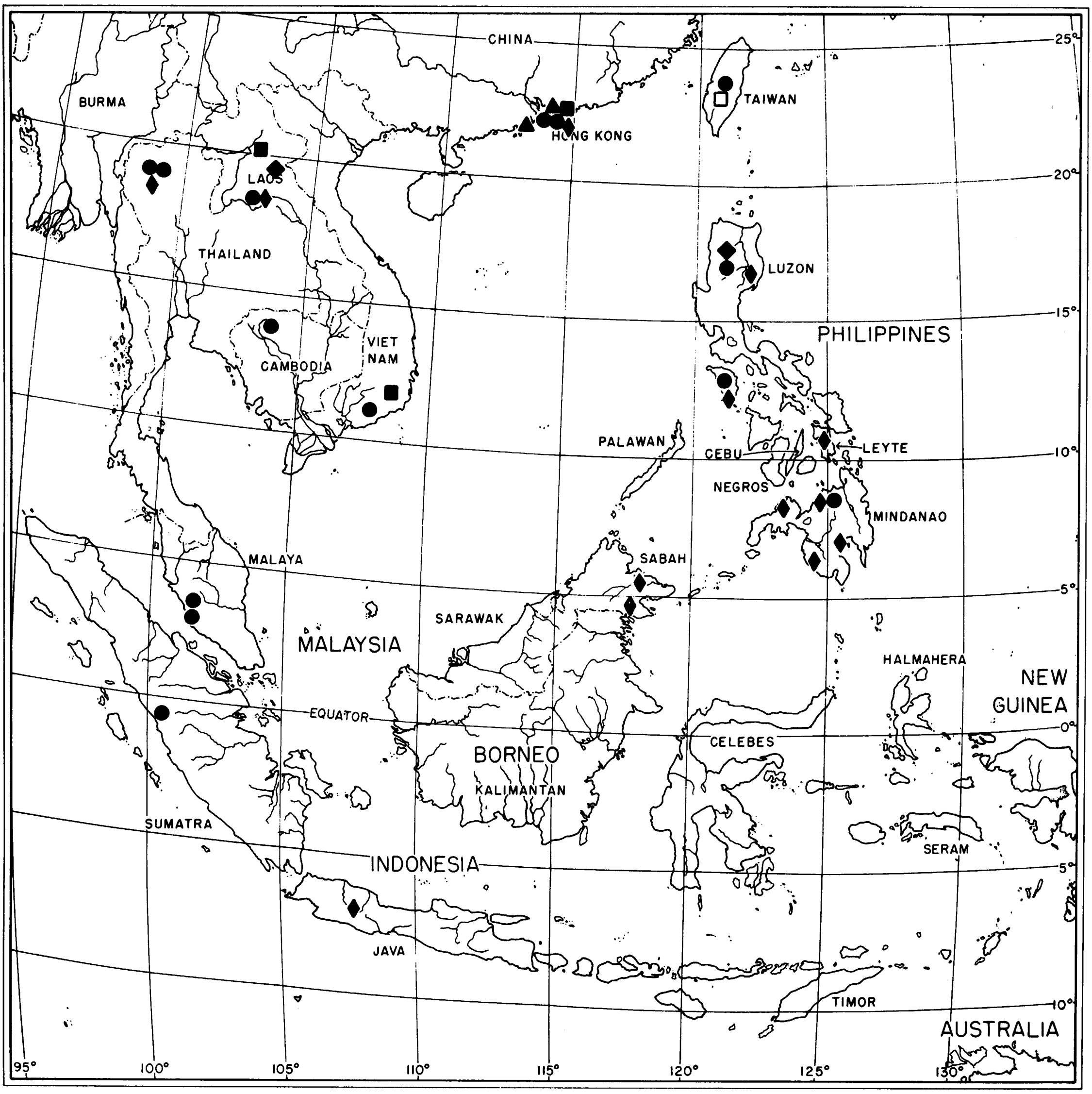
TYPE SPECIES: *Hallodapus rufescens* Burmeister.



FIGS. 362–368. *Clapmarius turgidus*, holotype. 362. Lateral view of head and prothorax. 363. Dorsal view of head and prothorax. 364. Lateral view of abdomen. 365. Dorsal view of abdomen. 366. Left paramere. 367. Vesica. 368. Phallotheca.

DISTRIBUTION: Southern Palearctic to southern Africa east to Japan, south to New Guinea and northern Australia.

DISCUSSION: In my previous discussion of *Hallodapus* (Schuh, 1974), I noted that some species had stridulatory devices incorporating the metafemur and the costal margin of the corium. This now appears to be a character, although sometimes difficult to see, which unites all *Hallodapus* species, and probably all species placed in the genera *Boopidella* Poppius, *Laemocoris* Reuter and *Trichophthalmocapsus* Poppius. Because this and all other characters used to diagnose *Hallodapus* are not unique, it may be that the group is not monophyletic as currently constituted. At least two species that can be placed in *Hallodapus* on the basis of the above diagnosis have heretofore been placed in the Cylapinae under the generic name *Tricho-*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LEYTE
NEGROS
MINDANAO
SABAH
MALAYA
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
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10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 369. Distribution of *Hallodapus* spp. *H. albofasciatus* (●) in part; *H. brunneus* (□); *H. centrimaculatus* (▲); *H. fasciatus* (■); *H. luridus* (◆); *H. ravenar* (◆).

fulvius Poppius (Carvalho, 1978; see *fasciatus* Poppius and *zonatus* Bergroth below). Placing *Trichofulvius fasciatus* Poppius, the type species of that genus, in *Hallodapus* makes *Trichofulvius* a junior synonym.

The following treatment of *Hallodapus* is intended only to document the diversity and distribution of the group for the Indo-Pacific area. Revisionary work based on all available material will be necessary for a more critical analysis of infraspecific variation and species limits.

ADDITIONAL SPECIMENS: In addition to the specimens listed below, I have examined the following material: 10 macropterous ♂♂, 4 macropterous ♀♀, and 7 brachypterous ♀♀ from

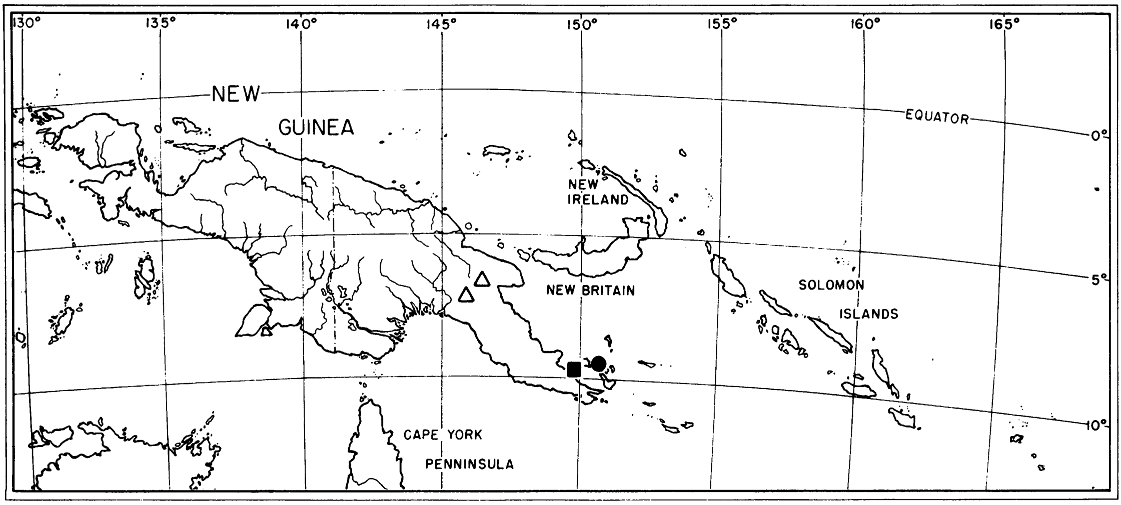


FIG. 370. Distribution of *Hallodapus* spp. *H. albofasciatus* (●); *H. fasciatus* (■); *H.* near *pseudosimilis* (△) (see also discussion under *H. discriminatus*).

India, Sri Lanka, China, Hong Kong, Malaya, Philippine Islands, and New Guinea (AMNH, Bishop, BMNH).

Hallodapus albofasciatus (Motschulsky)
Figures 369, 371–387

Leptomerocoris albofasciatus Motschulsky, 1863, p. 86.
Hallodapus albofasciatus Schuh, 1974, pp. 94–96.

DIAGNOSIS: Recognized by the long, erect pale setae on the dorsum, the yellow-white antennae (except proximal half of segment one brown) and tibiae, the complete, jagged-edged transverse fascia on the hemelytra just posterior to scutellum, the more or less quadrate white corial macula adjacent to cuneus (fig. 371), and the structure of the male genitalia (figs. 379–387). Metathoracic scent-gland evaporatory area as in figure 372; metafemoral stridulatory plectrum as in figures 374 and 375; costal stridulitrum as in figure 376; pretarsus as in figure 377; mesofemoral trichobothrium as in figure 378.

MALE GENITALIA: Figures 379–382 (see also figs. 383–387).

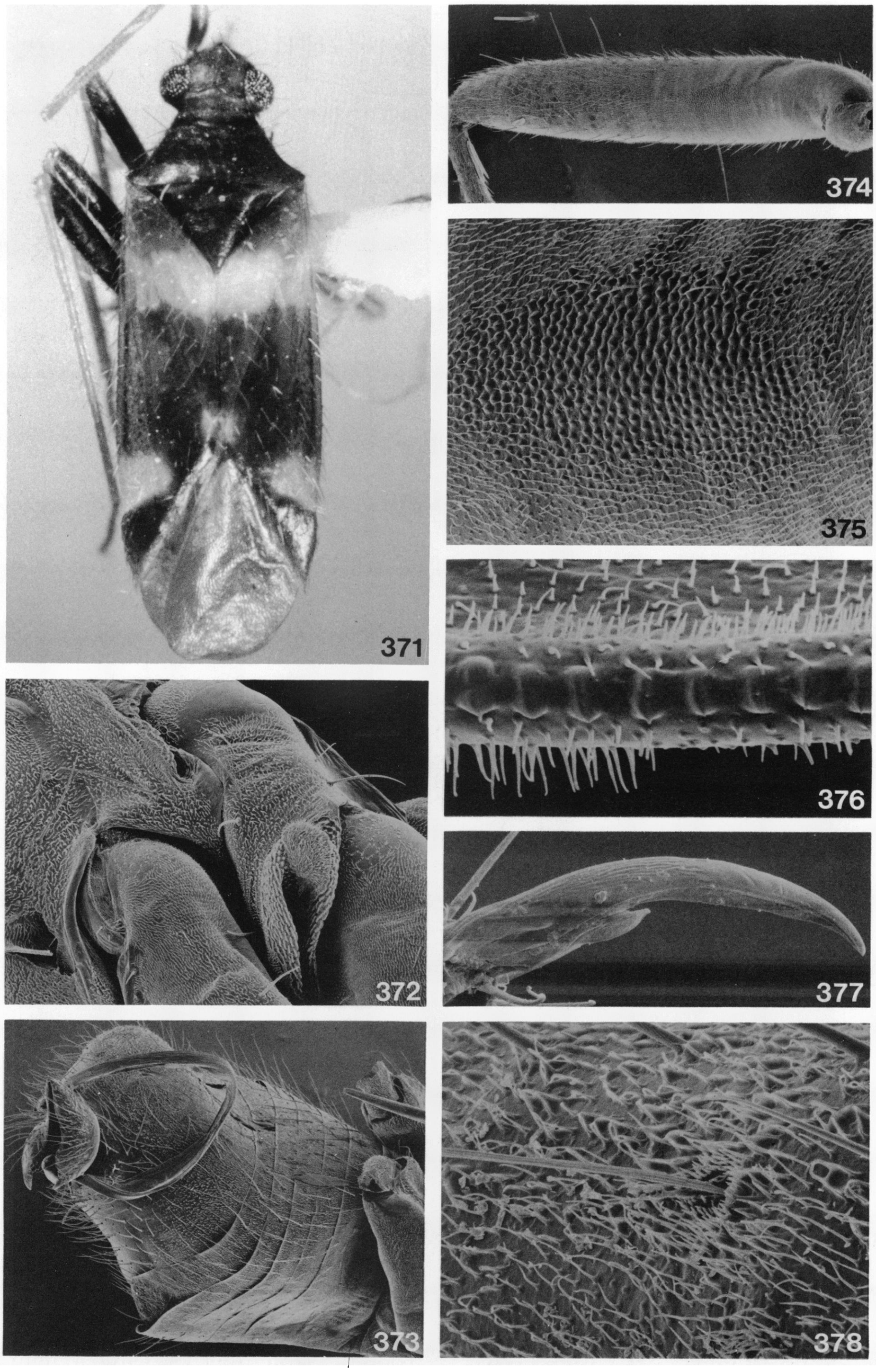
FEMALE: All available specimens macropterous.

FEMALE GENITALIA: Posterior wall simple.

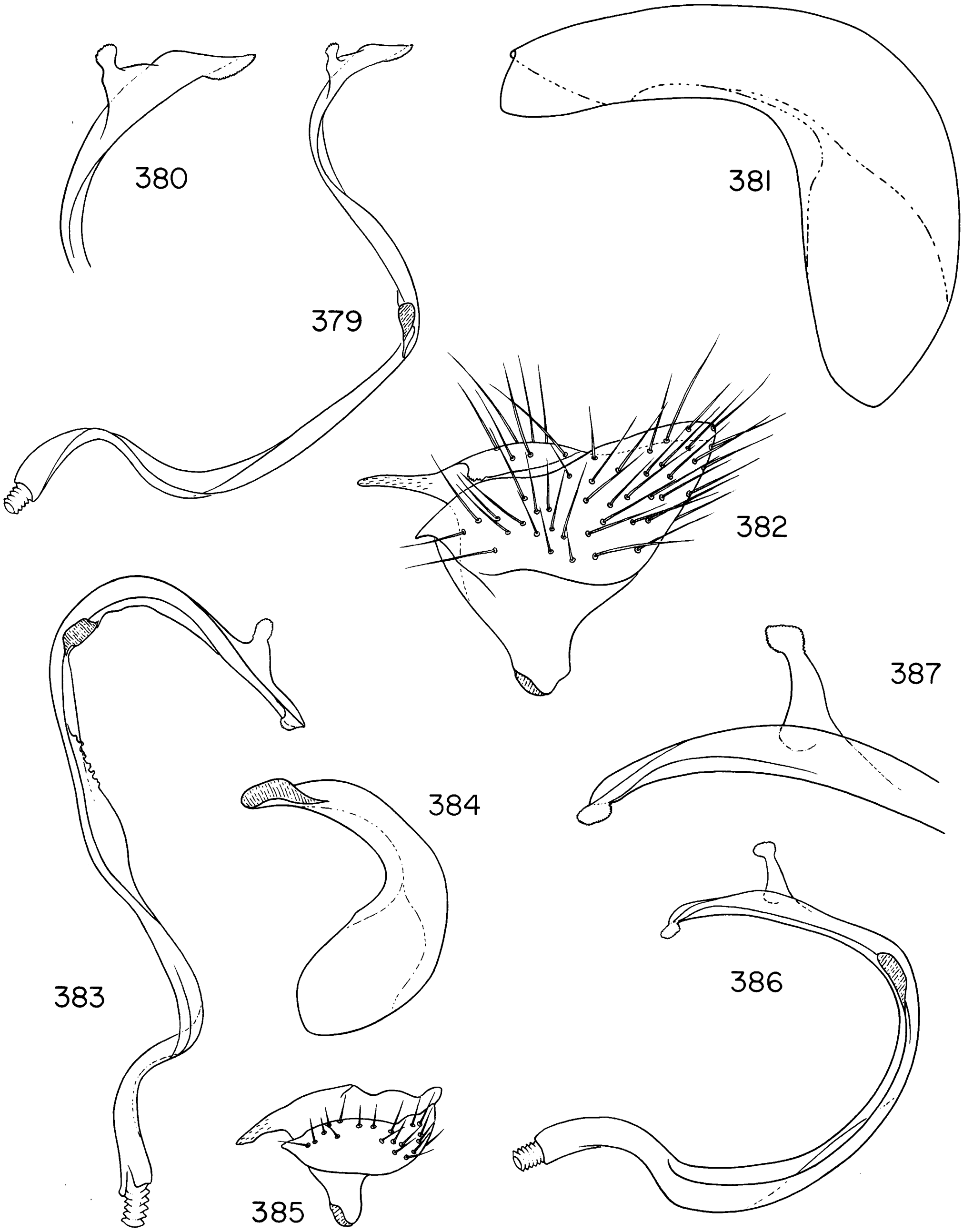
MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 369. Most of Africa east to Hong Kong and the Philippine Islands and south to the Solomon Islands.

SPECIMENS EXAMINED: CAMBODIA: Siemreap, Angkar, July 6, 1957 (Szent-Ivary; Bishop), 1♀. HONG KONG: Castle Peak, August 3–13, 1964 (Ming and Ming; Bishop), 2♂♂, 1♀; Sai Kung Station, April 8, 1965, September 2, 1964, October 15–28, 1964–1965, light trap (Ming; AMNH, Bishop), 8♂♂; Taipokau, Kowloon, September 2, 1965, malaise trap, light trap (Ming and Ming; Bishop), 3♂♂, 1♀; Taipokau, Forestry Station, July 15–17, 1964, light trap (Ming; Bishop), 1♂. INDIA: Calcutta, July 1907 (BMNH), 1♂; Assam, Ghabua, January 29, 1944 (Hardy; USNM), 1♂. INDONESIA: *Sumatra:* Dolok Merangir (Diehl; AMNH), 3♂♂, 4♀♀. LAOS: Vientienne, June 2–4, 1960, May 26, 1965 (Ashlock, Quate; Bishop), 2♂♂. MALAYSIA: *Malaya:* Pahang, Frazer's Hill, *ca.* 1300 m., August 16, 1967 (Crozier; Bishop), 1♂; Negri Sembilan, Port Dickson, January 15, 1935 (BMNH), 1♀. SOLOMON ISLANDS: *Guadalcanal:* Honiara, September 18–19, 1953 (Bradley; BMNH), 1♂. SRI LANKA: *Central Prov.:* Mahavell Ganga, 8 mi. WSW Nuwara-Eliya, March 18–19, 1962, at light (Brinck, Andersson, Cederholm; Lund), 1♂. *Eastern Prov.:* Inginiyagala, March 8–19, 1962 (Brinck, Andersson, Cederholm; Lund), 1♂. *Sabarangamuwa Prov.:* Kitugala, 21 mi. N Ratnapura, March 17, 1962, at light (Brinck, Andersson, Cederholm; Lund), 1♂. *Western Prov.:* Yakkala, 18 mi. NE of Colombo, January 14–31, 1982, at light (Brinck, Anders-

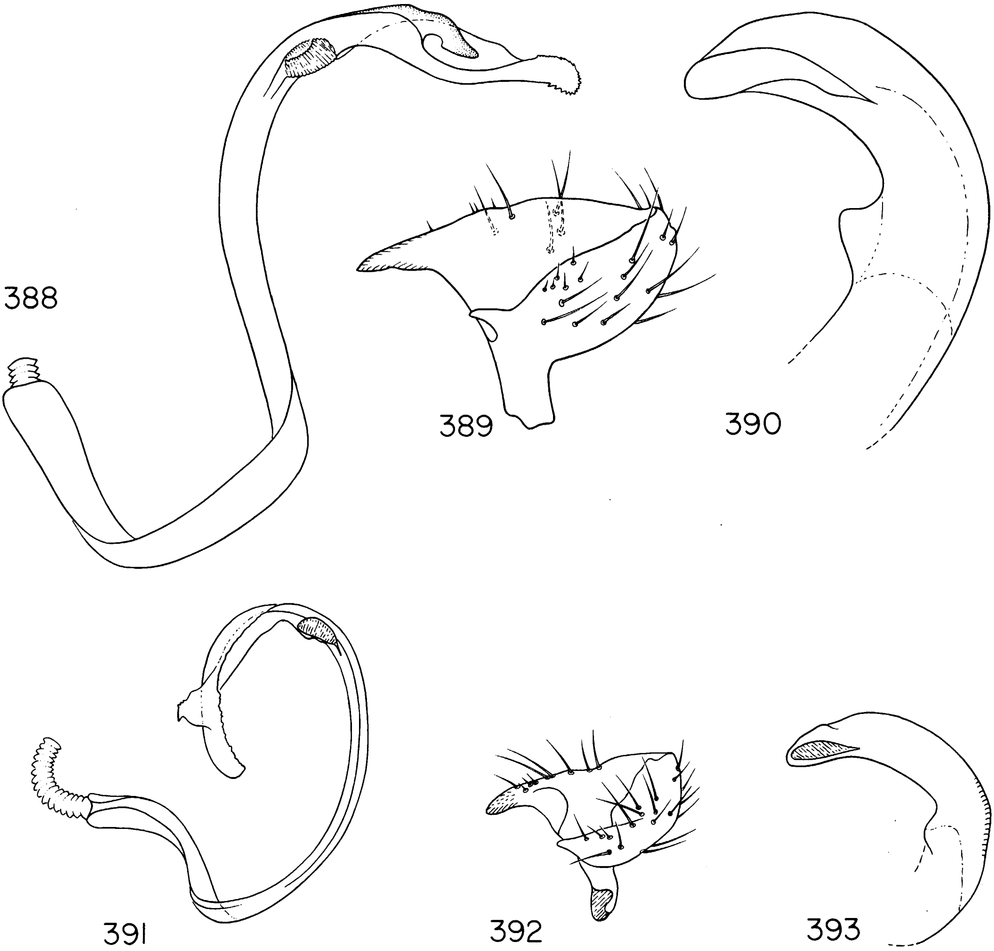


FIGS. 371–378. *Hallodapus albofasciatus.* 371. Dorsal view, ♂, Hong Kong. 372. Lateral view of metathorax showing scent-gland evaporatory area. 373. Lateroventral view of abdomen. 374. Inner surface of metafemur showing stridulatory plectrum. 375. Detail of stridulatory plectrum. 376. Detail of wing edge stridulitrum. 377. Mesial view of claw. 378. Detail of mesofemoral trichobothrium.



FIGS. 379–387. *Hallodapus albofasciatus,* male genitalia. 379. Vesica. 380. Detail of apex of vesica. 381. Phallotheca. 382. Left paramere. 383. Vesica. 384. Phallotheca. 385. Left paramere. 386. Vesica. 387. Detail of apex of vesica. (See discussion under *H. albofasciatus.*)

son, Cederholm; Lund), 7♂♂, 3♀♀. THAILAND: *Chiangmai Prov.:* Chiangmai (USNM), 3♂♂; Chiangmai, June 11, 1965, at light (Ashlock; Bishop), 1♂, 6♀♀; Mae Ping, 1000 ft., September 13, 1964, at light (Peters; Bishop), 1♂; Fang, April 12–19, 1958 (Maa; Bishop), 1♂; Bamma, May 5–10, 1958, light trap (Maa; Bishop), 1♂; Pak Chong, Decem-



FIGS. 388–393. *Hallodapus* spp., male genitalia. 388–390. *Hallodapus brunneus.* 388. Vesica. 389. Left paramere. 390. Phallotheca. 391–393. *H.* near *brunneus.* 391. Vesica. 392. Left paramere. 393. Phallotheca.

ber 1–3, 1957 (Maa; Bishop), 1♂. VIET NAM: Bien Hoa, September 10, 1969, at light (Joyce; Bishop), 2♂♂.

ADDITIONAL SPECIMENS: Fourteen male and five female specimens (AMNH, Bishop) are known from Taiwan, the Philippine Islands (Luzon, Mindanao, Mindoro), Laos, and Sumatra. The apex of the vesica (figs. 383, 386, 387) is similar to that found in *albofasciatus* with the thumblike projection laterally between the apex and the secondary gonopore. The anterior white fascia is incomplete, not quite reaching the claval commissure; antennal segment one is totally brown.

Hallodapus brunneus (Poppius)

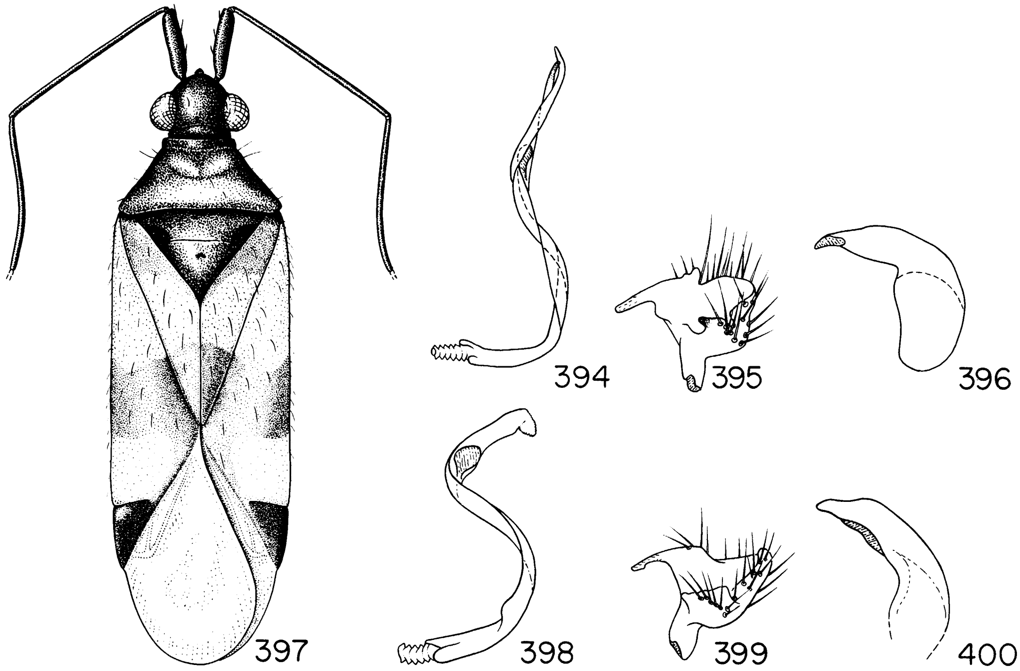
Figures 369, 388–393, 401

Tyraguellus brunneus Poppius, 1915, p. 62.

DIAGNOSIS: Recognized by the medium brown coloration with contrasting white hemelytral fasciae similar to that found in *albofasciatus,* the brown antennae with a white stripe on the interior surface of segments one and two, the femora which are light proximally and dark distally, the infuscate tibiae, and the form of the male genitalia.

MALE GENITALIA: Figures 388–390.

FEMALE: Unknown.



FIGS. 394–400. *Hallodapus* spp. 394–396. *H. centrimaculatus.* 394. Vesica. 395. Left paramere. 396. Phallotheca. 397. *Hallodapus discriminatus,* ♂, holotype. 398–400. *H.* near *discriminatus.* 398. Vesica. 399. Left paramere. 400. Phallotheca.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 369. Taiwan.

SPECIMEN EXAMINED: TAIWAN: Takao (Sauter; Budapest), 1♂ (holotype).

DISCUSSION: Two male specimens (Bishop) from Hong Kong and Luzon, Philippine Islands may represent *brunneus.* The color pattern is in basic agreement, antennal segment has a white stripe mesially, and there are similarities in the structure of the male genitalia (figs. 391–393).

Hallodapus centrimaculatus (Poppius)

Figures 369, 394–396, 402

Tyraguellus centrimaculatus Poppius, 1914, p. 167.

DIAGNOSIS: Recognized by the dark brown coloration of the dorsum, the contrasting round white macula on the clavi just posterior to the scutellum, the contrasting quadrate white macula on the corium adjacent to the cuneal fracture, the mahogany (reddish) cuneus, antennal segment one brown on proximal one-third, the distal two-thirds of segment one and all of segment two white, and the dark femora (fig. 402).

MALE GENITALIA: Figures 394–396 (specimen from Macao).

FEMALE: Macropterous. Similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 369. India, Java, Macao, Hong Kong.

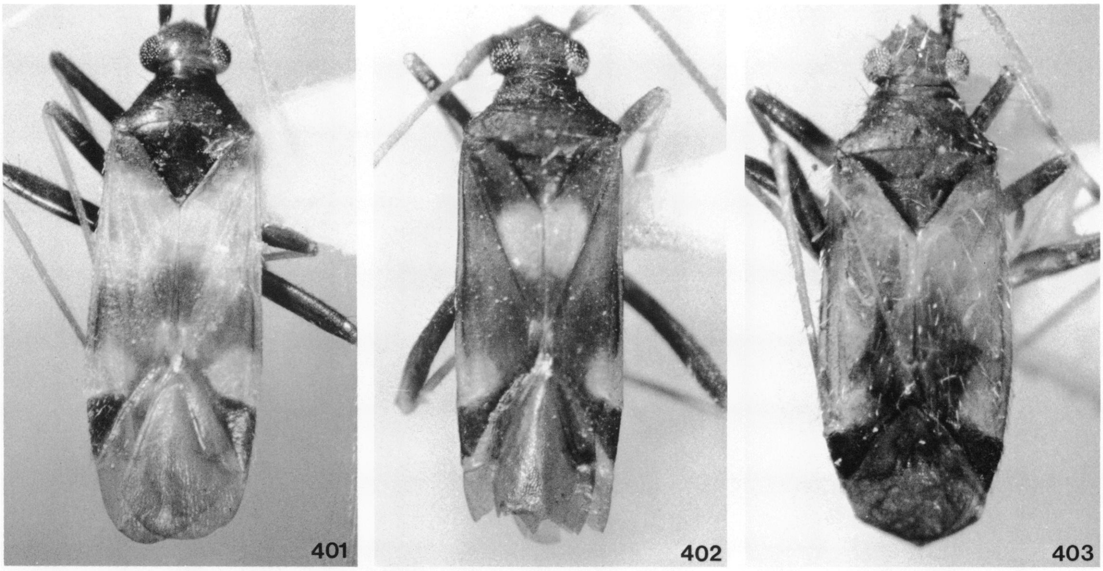
SPECIMENS EXAMINED: HONG KONG: Sai Kung Station, October 19–28, 1964, January 23, 1965 (Voss, Ming; AMNH, Bishop), 3♂♂; Taipokau, Kowloon, September 2, 1965, malaise trap (Ming and Ming; Bishop), 1♂. INDIA: Calcutta, August 15, 1907 (BMNH), 1♂. INDONESIA: Banjowangi (Helsinki), 1♂ (holotype). MACAO: November 1906 (Muir; CAS), 1♂.

DISCUSSION: The holotype female has no legs. The wide distribution and variation in coloration of available specimens suggest that possibly more than one species with the *centrimaculatus* color pattern may be involved.

Hallodapus discriminatus (Distant)

Figures 397–400, 403

Serebaeus discriminatus Distant, 1910, p. 11.



FIGS. 401–403. *Hallodapus* spp. 401. *H.* near *brunneus,* ♂, Luzon, Philippine Islands. 402. *H. centrimaculatus,* ♂, Hong Kong. 403. *H.* near *discriminatus,* ♂, Fergusson Island, Papua New Guinea.

DIAGNOSIS: Recognized by the color pattern as found in *albofasciatus,* with the complete, broad, white anterior fascia and the quadrate posterior maculae, but the hemelytra are not so intensely dark as in *albofasciatus* (fig. 397); antennal segments one, two, and three brown, all femora and tibiae pale.

MALE GENITALIA: Not examined. (See discussion.)

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Sri Lanka.

SPECIMEN EXAMINED: SRI LANKA: Peradeniya (BMNH), 1♂ (holotype).

DISCUSSION: Five male specimens (AMNH) from Fergusson Island, Milne Bay Prov., Papua New Guinea are similar in coloration pattern to the holotype. The male genitalia are illustrated in figures 398–400.

Hallodapus fasciatus (Poppius), new combination

Figures 369, 370, 404, 407–409

Trichofulvius fasciatus Poppius, 1909, p. 42; Carvalho, 1978, pp. 125–126.

DIAGNOSIS: Recognized by the pale brown dorsum with dark brown spots, the mahogany cuneus, the long, pale, shining, suberect dorsal vestiture, antennal segment one brown on proximal half and pale on distal half, the meso- and meta-femora pale proximally and mahogany distally, the pale tibiae (fig. 404), the dimensions, and the structure of the male genitalia (figs. 407–409).

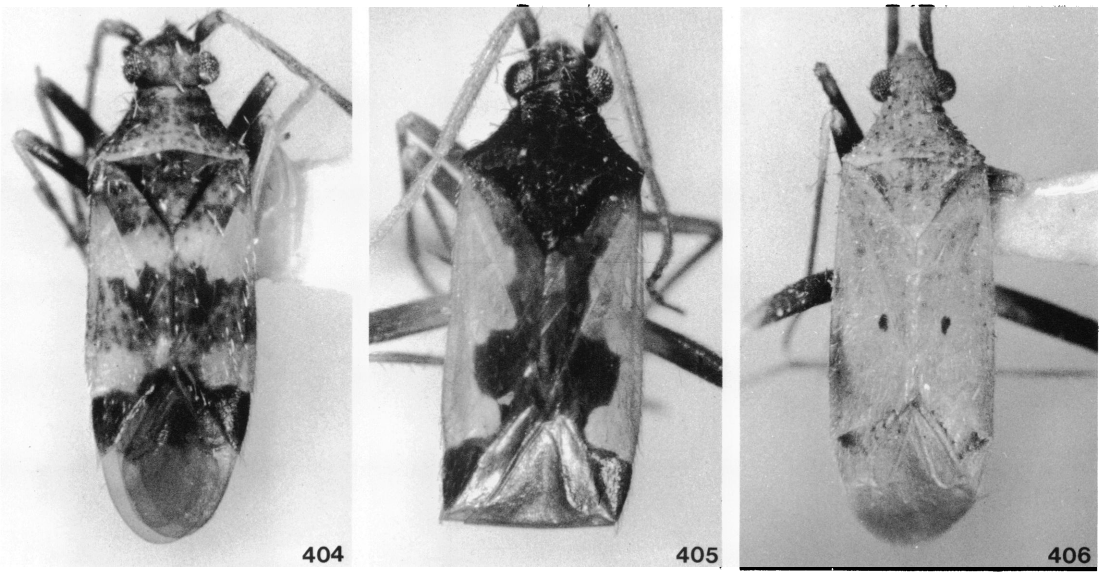
MALE GENITALIA: Figures 407–409.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figures 369 and 370. Sri Lanka east to Hong Kong and south to New Guinea.

SPECIMENS EXAMINED: HONG KONG: Sai Kung Station, October 19, 1964, December 30, 1964, May 10, 1965 (Voss and Ming; Bishop), 2♂♂, 1♀ (brachypterous); Taipokau, June 10, 1964, light trap (Voss and Ming; Bishop), 2♂♂; Taipokau, Forestry Station, July 15–17, 1964, light trap (Ming and Ming), 1♂; Taipokau, Kowloon, May 20, 1965, malaise trap (Ming and Ming), 1♂. INDIA (South): Kamataka, Gersoppa (Jog Falls), November 19–24, 1977 (Copenhagen), 1♂ (macropterous). LAOS: *Wapikhamthong Prov.:* Wapi, April 15, 1967 (Bishop), 1♂. PAPUA NEW GUINEA: *Milne Bay Prov.:* Cape Vogel Peninsula, Menapi, 0–30 m., April 8–25, 1953 (Tate; AMNH), 1♂; Normandy Island, Wai-



FIGS. 404–406. *Hallodapus* spp. 404. *H. fasciatus*, ♂, Normandy Island, Papua New Guinea. 405. *H. indicus*, ♂, Sri Lanka. 406. *H. luridus*, holotype.

kaiuna, 0–50 m., April 26, 1956 (Tate; AMNH), 1♂. SRI LANKA: *Sabarangamuwa Prov.:* Bulutota Pass, 2 mi. SE Rakwana, February 25, 1962 (Brinck, Andersson, Cederholm; Lund), 1♂. VIET NAM: 15 km. NE Dalat, 1850 m., May 5, 1960 (Quate; Bishop), 1♂.

DISCUSSION: The material recorded above is conspecific with that studied by Carvalho (1978). Like Carvalho, I have not compared available material with the holotype.

Hallodapus fenestratus Linnavuori

Hallodapus fenestratus Linnavuori, 1961, pp. 165–166; Miyamoto and Lee, 1966, pp. 378–379.

DISCUSSION: Described by Linnavuori (1961) from Kyushu, this species was subsequently recorded by Miyamoto and Lee (1966) from Taiwan, Korea, and Quelpart Island. The color pattern of *fenestratus* is similar to that found in *centrimaculatus*, with a large white anterior macula confined to the clavi just posterior to the scutellum. I have not examined specimens of this species.

Hallodapus indicus (Poppius)

Figures 405, 410–412

Plagiorhamma indica Poppius, 1911, p. 30.

DIAGNOSIS: Recognized by the "Plagiorhamma-type" color pattern very similar to that of *similis* (Poppius) from Africa, with the exocorium completely white, the endocorium white on the anterior one-half and posterolaterally, and the clavus white along the claval suture on the anterior one-half, the white antennae except for brown proximal one-third of segment one, the generally pale to almost white legs (fig. 405), and the structure of the male genitalia (figs. 410–412).

MALE GENITALIA: Figures 410–412.

FEMALE: Similar to male.

FEMALE GENITALIA: Not examined.

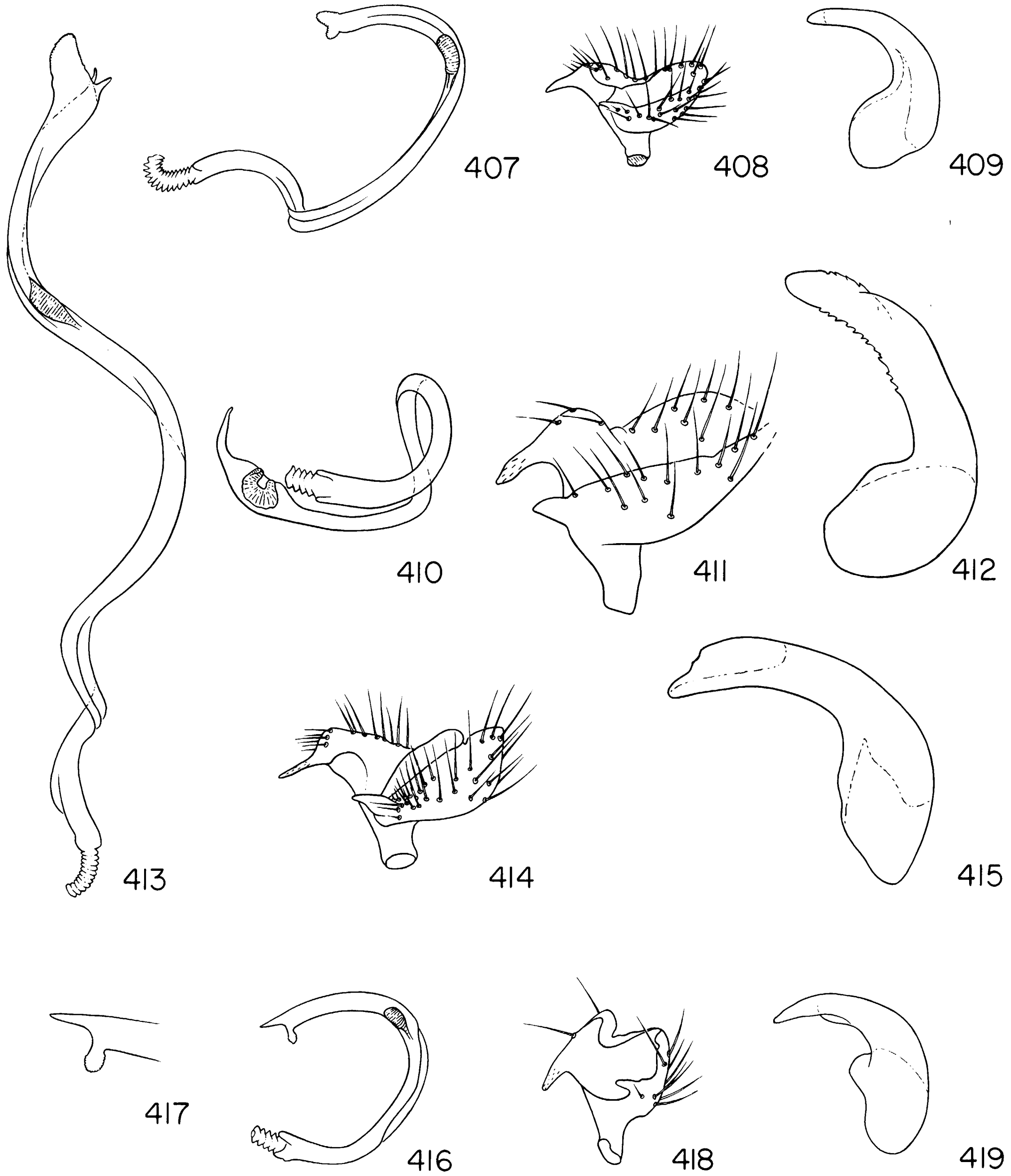
MEASUREMENTS: See Appendix.

DISTRIBUTION: Sri Lanka, India.

SPECIMENS EXAMINED: INDIA: *South India:* 1930 (Campbell; BMNH), 1♂, 1♀; Chikkabailapura, 1926 (Campbell; BMNH), 1♂, 2♀♀. *Bengal:* Madhupur, October 22, 1909 (Paiva; BMNH), 1♂. SRI LANKA: Colombo, July 1909 (BMNH), 1♀; Peradeniya, June 1910 (BMNH), 1♂. *Western Prov.:* Yakkala, 18 mi. NE Colombo, January 14–31, 1961 (Brinck, Andersson, Cederholm; Lund), 4♂♂, 3♀♀.

Hallodapus kyushuensis Miyamoto

Hallodapus kyushuensis Miyamoto, 1966, pp. 434, 436–438.



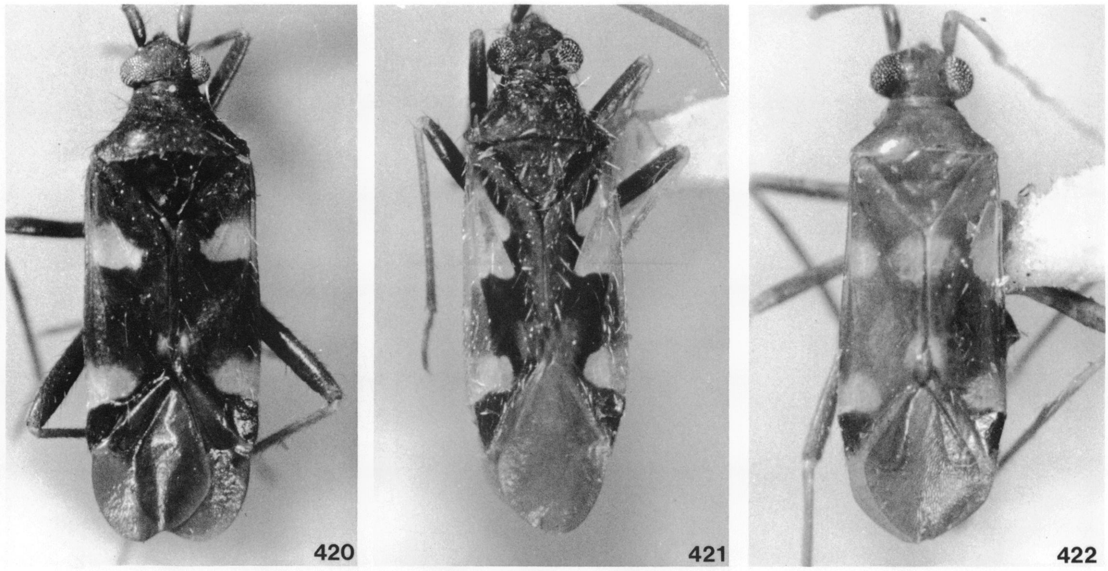
FIGS. 407–419. *Hallodapus* spp., male genitalia. 407–409. *H. fasciatus.* 407. Vesica. 408. Left paramere. 409. Phallotheca. 410–412. *H. indicus.* 410. Vesica. 411. Left paramere. 412. Phallotheca. 413–415. *H. luridus.* 413. Vesica. 414. Left paramere. 415. Phallotheca. 416–419. *H. maculatus.* 416. Vesica. 417. Detail of apex of vesica. 418. Left paramere. 419. Phallotheca.

DISCUSSION: Described by Miyamoto (1966) from Kyushu and the Goto Islands, Japan. Compared by Miyamoto to *fenestratus, persimilis,* and *linnavuori* with illustrations of the male genitalia. The pattern of coloration is similar to that of *albofasciatus.* I have not examined specimens of this species.

Hallodapus linnavuori Miyamoto

Hallodapus linnavuori Miyamoto, 1966, pp. 433–436.

DISCUSSION: Described from Kyushu and related to *persimilis* by Miyamoto (1966). The pattern of coloration is similar to that of *al-*



FIGS. 420–422. *Hallodapus* spp. 420. *H. maculatus,* ♂, South India. 421. *H.* near *pseudosimilis,* ♂, Kratke Mountains, Papua New Guinea. 422. *H. ravenar,* ♂, Hong Kong.

bofasciatus and *kyushuensis.* I have not examined specimens of this species.

Hallodapus luridus, new species
Figures 369, 406, 413–415

DIAGNOSIS: Recognized by the light yellowish coloration with some brown spots anteriorly on the dorsum, and mahogany marking on the corium adjacent to the claval commissure somewhat posterior to the midpoint of the claval commissure, the mahogany base of the cuneus, the brown femora (fig. 406), and the structure of the male genitalia (figs. 413–415).

DESCRIPTION: Macropterous male. Elongate, nearly parallel-sided, length apex tylus-cuneal fracture 2.46, width pronotum 0.90; general coloration light yellowish, dorsum anteriorly with some small brown spots, corium adjacent to clavus and somewhat posterior to midpoint of claval commissure with a small mahogany macula; base of cuneus irregularly mahogany; femora brown.

Body surface smooth, dull; dorsum covered with short to moderately long, reclining, pale, shining setae; antennae with very short, neat vestiture.

Head with only a very weak, rounded carina on posterior margin between eyes, strongly projecting in front of eyes in dorsal view, tylus flattened laterally and projecting about one-third of length of antennal segment one; metathoracic scent-gland evaporatory area narrow, anterior portion overlapping posterior portion ventrally; metafemur with a distinct, granular stridulatory plectrum on proximal half of interior surface.

MALE GENITALIA: Figures 413–415.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

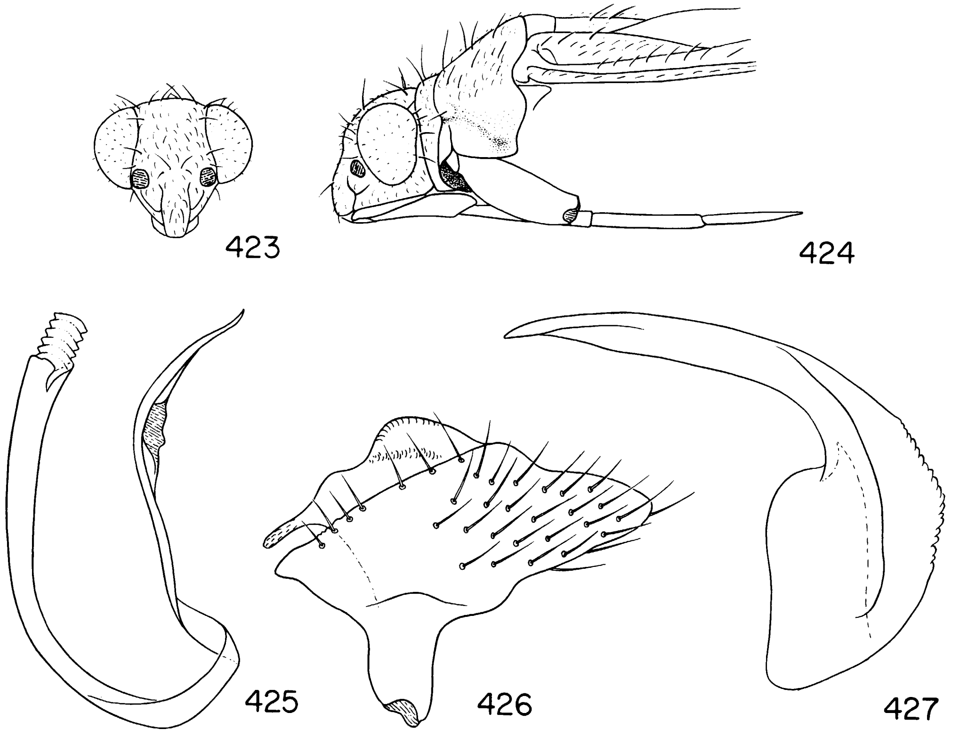
ETYMOLOGY: Named for its light coloration; from the Latin, *luridus,* pale yellow.

DISTRIBUTION: Figure 369. Laos, Philippine Islands.

HOLOTYPE ♂: LAOS: Ban Theuong, 18 km. NW of Xieng Khouang, 1035 m., August 10–17, 1960, R. E. Leech collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 2♂♂. PHILIPPINE ISLANDS: *Luzon:* Mountain Prov., Mt. Ifugao, Mayoyao, 1000–1500 m., July 7, 1966, light trap (Torrevillas; Bishop), 1♂.

DISCUSSION: The species probably belongs to a group including *Hallodapus fasciatus.*



FIGS. 423–427. *Hallodapus* near *pseudosimilis*. 423. Frontal view of head, ♂. 424. Lateral view of head and prothorax, ♂. 425. Vesica. 426. Left paramere. 427. Phallotheca.

Hallodapus maculatus (Distant)

Figures 416–419, 420

Tyraquellus maculatus Distant, 1904, p. 471.

DIAGNOSIS: Recognized by the dark mahogany to castaneous coloration of the dorsum with one strongly contrasting white rounded macula anteriorly at about the level of the apex of the scutellum on the corium (except costa) and slightly encroaching on clavus, another contrasting quadrate white macula laterally on the corium adjacent to the cuneal fracture (fig. 420), and the form of the male genitalia (figs. 416–419). There is some variation in the coloration of the legs in available specimens, suggesting that more than one species may be involved.

MALE GENITALIA: Figures 416–419.

FEMALE: Macropterous. Similar to available males.

MEASUREMENTS: See Appendix.

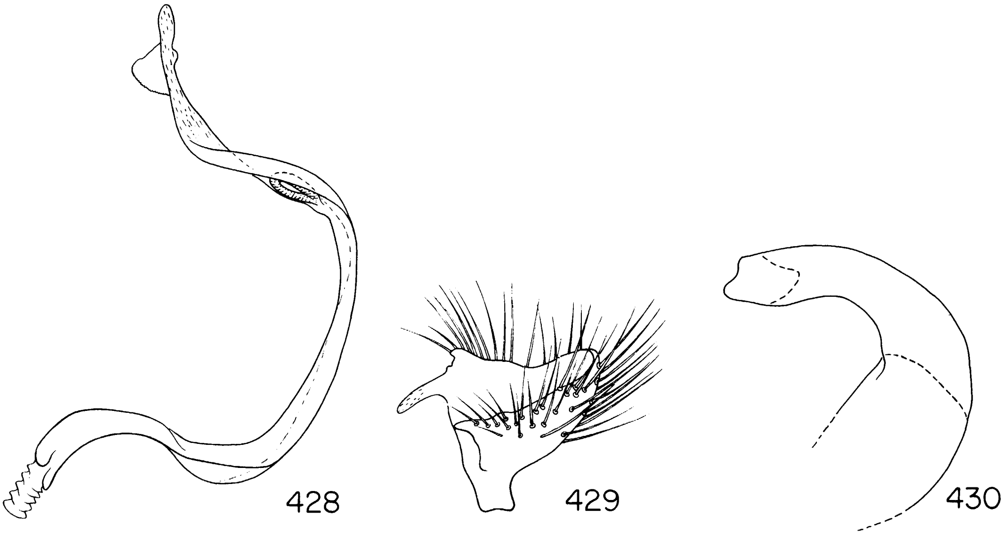
SPECIMENS EXAMINED: INDIA (South): Karnataka, Gersoppa (Jog Falls), November 19–24, 1977, ca. 600 m. (Copenhagen), 1♂. SRI LANKA: Dambuwa, May 15–30, 1965 (Pereira; AMNH), 1♂; Western Prov., Yakkala, 18 mi. NE of Colombo, January 14–31, 1962 (Brinck, Andersson, Cederholm; Lund), 3♂♂.

DISCUSSION: The holotype of *maculatus,* a female, is deposited in the British Museum (Nat. Hist.).

Hallodapus persimilis (Poppius)

Allodapus persimilis Poppius, 1915, p. 63.
Hallodapus persimilis Miyamoto, 1966, p. 435.

DISCUSSION: The holotype of this Formosan species has been lost. The pin bearing the labels corresponding to Poppius's original description has no specimen associated with it. Miyamoto (1966) illustrated the genitalia of *persimilis*; he did not indicate the origin of specimens on which the drawings were based.



FIGS. 428–430. *Hallodapus ravenar*, male genitalia. 428. Vesica. 429. Left paramere. 430. Phallotheca.

Hallodapus near *pseudosimilis* Schuh
Figures 370, 421, 423–427

Hallodapus pseudosimilis Schuh, 1974, pp. 96–98.

DIAGNOSIS: Recognized by the "Plagiorhamma-type" color-pattern as described for *indicus*, but differing with the excorium darkened to near wing edge on posterior one-half (except for white macula adjacent to cuneus), the castaneous femora, and the structure of the male genitalia.

MALE GENITALIA: Figures 425–427.

FEMALE: Macropterous. Form similar to male; sometimes possibly brachypterous.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 370. New Guinea, northern Queensland, and southern Africa.

SPECIMENS EXAMINED: PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Woneara, 6°40′S, 145°55′E, 1450 m., June 14, 1966 (Gressitt and Wilkes; Bishop), 1♂. *Morobe Prov.:* Umi River, Markham Valley, 480 m., Nov. 14–24, 1959 (Brass; AMNH), 2♂♂, 1♀; Kratke Mts., Lae-Goroka Road, Kassam, November 11, 1959 (Brass; AMNH), 1♂.

DISCUSSION: The New Guinea specimens are very similar in coloration and form of the vesica and phallotheca to *pseudosimilis* species from the Transvaal, South Africa (Schuh, 1974). A single female specimen from northern Queensland is strongly brachypterous, but resembles the New Guinea material closely in pattern of coloration.

Hallodapus ravenar (Poppius)
Figures 369, 422, 428–430

Allodapus ravenar Poppius, 1914c, p. 165.

DIAGNOSIS: Recognized by the light brown to slightly reddish coloration (including the legs and antennae) with a mahogany cuneus and contrasting white maculae on the corium and clavus just posterior to the scutellum, on the corium adjacent to the cuneal fracture and at the apex of the claval commissure, the long, erect pale dorsal vestiture and the structure of the male genitalia.

MALE GENITALIA: Figures 428–430.

FEMALE: Macropterous. Very similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 369. Hong Kong, Indochina, Philippines, Northern Borneo, Java, and India.

SPECIMENS EXAMINED: HONG KONG: Castle Peak, August 3–5, 1964, light trap (Ming and Ming; Bishop), 1♂; Sai King Station, October 15–27, 1964, light trap (Voss and Ming; Bishop), 2♂♂; Taipokau, June 30, July 2–6, 1964, light trap (Ming and Ming; Bishop), 2♂♂, 1♀. INDIA: Assam, Chabua, October 28, 1943 (Hardy; USNM), 1♂. INDONESIA: Java (Helsinki), 1♀ (holotype). LAOS: Vientienne, May 9, 1965, at light (Ashlock; Bishop), 2♂♂. MALAYSIA: *Sabah Prov.:* Tawau Residency, Dusin Hill, August 3–7, 1962, in jungle (Holtmann; Bishop), 1♂; Bettotan near Sandakan, August 16, 1927 (BMNH), 1♂. PHILIPPINE ISLANDS: *Leyte:* Tacloban, May 6, 1945 (Ross; CAS), 10♂♂, 1♀; San Jose, March 1–4, 1945 (Ray; Field), 1♂; Abuyog, 35 mi. S of Tacloban, July 9–12, 1961 (AMNH), 1♀. *Luzon:* Isabella Prov., San Mariano, April 20–May 10, 1961 (AMNH), 1♂. *Mindanao:* Cotabato, Milbuk, August 9–10, 1958, light trap (Milliron; Bishop), 1♀; Davao Prov., Calian, June 12–July 16 (Clagg; AMNH), 3♂♂, 6♀♀; Davao Prov., Maco, Tagum, sea level, October 1946 (Hoogstraal; Field), 1♂; Cotabato Prov., Kabasalan, Liguasan, December 1946 (Werner; Field), 1♂; Misamis Oriental, Gingoog, April 26–27, 1960 (Torrevillas; Bishop), 1♂; Misamis Oriental, Cagayandeoro, Airport, November 3, 1959 (Yoshimoto; Bishop), 1♀; Misamis Oriental, Pomalihi, 21 km. W of Gingoog City, 800–1000 m., September 15, 1965, light trap (Torrevillas; Bishop), 1♂; Zamboanga del Norte, 25 km. S of Manucan, October 18, 1959 (Quate; Bishop), 1♂, 2♀♀; Agusan, Los Arcos, November 19–23, 1959, light trap (Quate and Yoshimoto), 2♂♂. *Mindoro:* San Jose, October 1945 (Ross; CAS), 1♀. THAILAND: *Chiangmai Prov.:* Chiangmai, Mae Ping, 1000 ft., November 13, 1964, at light (Peters; CAS), 1♂; Fang, April 12–19, 1958 (Maa; Bishop), 1♂; Pang-Kan Pawng, November 15–16, 1957 (Gressitt; Bishop), 1♂.

Hallodapus zonatus (Bergroth), new combination

Trichofulvius zonatus Bergroth, 1920, p. 78; Carvalho, 1978, pp. 126–127.

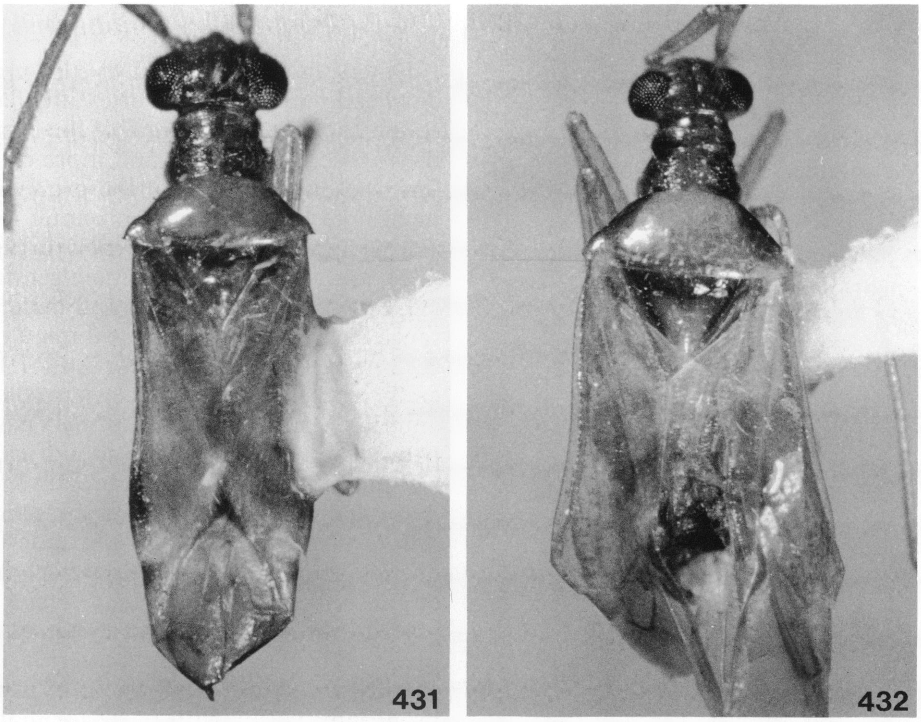
DISCUSSION: Described by Bergroth from material collected in the Philippines by C. F. Baker, this species has recently been recorded from New Guinea by Carvalho (1978). I have not located the type specimen and therefore cannot confirm its true identity or correct generic and subfamily placement.

PODULLAHAS, NEW GENUS

DIAGNOSIS: Recognized by the prognathous head with a sulcate vertex, the flattened, collar-like, anterior margin of the pronotum, the rugose, constricted, and more or less cylindrical anterior lobe of the pronotum, the highly polished posterior pronotal lobe, the at least partly subhyaline hemelytra (figs. 431, 432), and the form of the male genitalia.

DESCRIPTION: Macropterous male. Small, range length apex tylus-cuneal fracture 2.32–2.83, range width pronotum 0.84–1.12; generally reddish or reddish brown in coloration; anterior lobe of pronotum strongly narrowed, parallel-sided, and nearly cylindrical; anterior margin in the form of a broad very weakly rounded collar; body surface ranging from dull to rather strongly shining, anterior pronotal lobe distinctly rugose; dorsal vestiture of generally long, nearly erect setae.

Head more or less rectangular as viewed from above; eyes large, posterior margins slightly removed from anterior margin of pronotum; vertex with posterior margin demarcated by a low, rather sharp transverse carina, longitudinally sulcate, frons transversely striate; frons protruding somewhat anterior to eyes; antennae inserted near the ventral margin of the eye, fossae nearly contiguous with margin of eye, eyes emarginate at antennal insertion (fig. 433); antennal segment one slightly longer than height of head cylindrical, segment two cylindrical, of lesser diameter than segment one, segment three subequal in diameter to segment two (segment four missing in known specimens); clypeus projecting anteriorly, flattened laterally; buccal cavity short, ovoid; gula horizontal and nearly as long as buccal cavity (fig. 434); genae about as wide as diameter of antennal segment one; labium reaching to about base of metacoxae; anterior lobe of pronotum strongly narrowed, nearly cylindrical and parallel-sided; anterior margin of pronotum in the form of a broad, weakly rounded collar; posterior lobe of pronotum elevated and swollen; mesoscutum exposed, strongly inclined, and separated from scutellum by a deep V-shaped transverse impression; scutellum weakly swollen; lateral corial margin weakly to distinctly sinuate; cuneal incisure obsolete; cuneal fracture angled anterome-



FIGS. 431, 432. *Podullahas* spp. 431. *P. sabah,* holotype. 432. *P. sarawak,* holotype.

sially; posteromesial margin of membrane cells sharply angulate; all tibiae with several rows of minute black spines and longer reclining light-colored spines of lengths less than tibial diameter and of irregular distribution; claws gently curved, broadened at base; pulvilli minute; parempodia setiform.

MALE GENITALIA: Vesica relatively short and stout, C-shaped, rather strongly sclerotized with a well-developed subapical secondary gonopore and with a strongly sclerotized, somewhat contorted single apical spine; phallotheca strongly bent without peculiar modifications; left clasper typically phyline, boat-shaped with both sensory processes rather strongly attenuated.

FEMALE: Unknown.

TYPE SPECIES: *Podullahas sarawak,* new species.

ETYMOLOGY: An anagram of *Hallodapus*; masculine.

DISTRIBUTION: Known only from the island of Borneo.

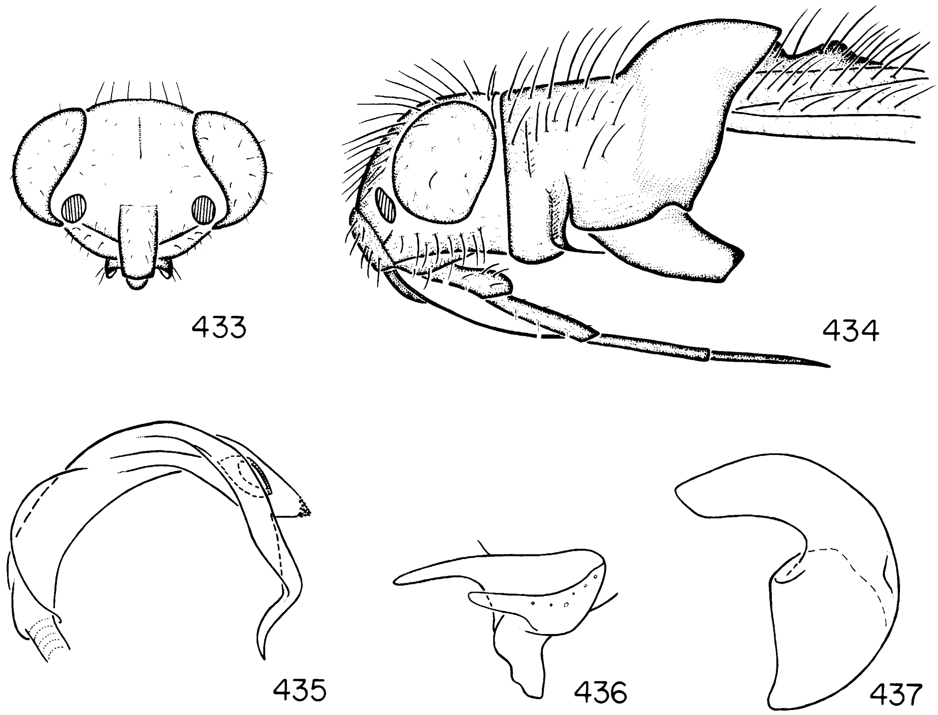
Podullahas sabah, new species

Figures 431, 433–437

DIAGNOSIS: Separated from *sarawak* by its smaller size and differences in structure.

DESCRIPTION: Length apex tylus-cuneal fracture 2.32, width pronotum 0.84; general coloration light reddish brown with area anterior to cuneal fracture and about one-half of cuneus bright red; area immediately surrounding cuneal fracture nearly white; antennal segment one and clypeus with some reddish markings.

Head, pronotum, scutellum, and anterior one-fourth of corium polished and weakly to strongly shining, head and anterior lobe of pronotum more or less rugose or rugulose, posterior lobe of pronotum smooth; clavus and remainder of corium granulose and dull; vestiture of dorsum solely of numerous long erect setae; antennal segment one with a few reclining setae, segment two with numerous



FIGS. 433–437. *Podullahas sabah.* 433. Frontal view of head. 434. Lateral view of head and prothorax. 435. Vesica. 436. Left paramere. 437. Phallotheca.

reclining setae nearly as long as diameter of segment, segment three with somewhat shorter reclining vestiture.

MALE GENITALIA: Figures 435–437.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Sabah Province, Malaysia; a noun in apposition.

DISTRIBUTION: Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Quoin Hill Cocoa Research Station, November 19, 1962, malaise trap, Y. Hirashima collector; deposited in the B. P. Bishop Museum, Honolulu.

DISCUSSION: This species is known from only a single specimen which is in fair condition. Characters such as the femoral trichobothrial patterns have not been investigated because the metafemora are missing in the holotype.

Podullahas sarawak, new species

Figure 432

DIAGNOSIS: Separated from *sabah* by its larger size and differences in structure.

DESCRIPTION: Length apex tylus-cuneal fracture 2.83, width pronotum 1.12; general coloration golden or golden brown, darkest on head, anterior lobe of pronotum, posterior lobe of pronotum laterally, and mesoscutum; endocorium and clavus with a brown granular patch posterior to level of apex of scutellum; otherwise largely hyaline; hemelytra with some reddish infusions; thorax laterally and entire abdomen strongly reddish; all appendages, including coxae golden.

Vestiture and surface texture similar to *sabah.*

Scutellum laterally with a series of vertical striations forming a filelike structure; antennal segments two, three, and four missing in

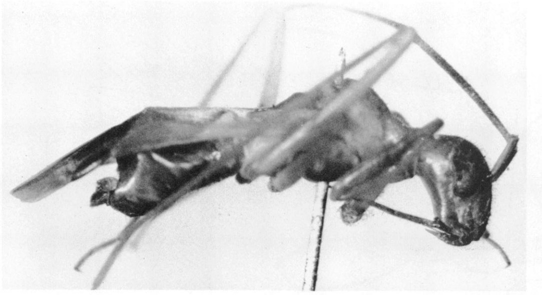


FIG. 438. *Sohenus proditus*, ♂, holotype.

only known specimen; lateral corial margin rather strongly sinuous, strongly rounded anterior to cuneal incisure, cuneus small, appearing strongly inset.

MALE GENITALIA: Not examined.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Sarawak Province, Malaysia; a noun in apposition.

DISTRIBUTION: Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sarawak Prov.*: Bau District, Bidi, 90–240 m., October 2, 1958, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

SOHENUS DISTANT

Sohenus Distant, 1910a, p. 14; Schuh, 1974, p. 303.

DIAGNOSIS: Recognized by its relatively large size, elongate, antlike appearance, the flattened, collar-like anterior pronotal margin, the triangular fascia on the corium and clavus narrowing mesially, the prognathous, dorsoventrally elongate head, the eyes occupying less than two-thirds the height of the head, the head necklike behind, the eyes removed from the anterior margin of the pronotum by a distance about equal to the length of an eye in dorsal view, and the form of the male genitalia.

MALE GENITALIA: Relatively large, vesica sigmoid and twisted, secondary gonopore well developed; phallotheca weakly L-shaped; left paramere boat shaped, large.

TYPE SPECIES: *Sohenus proditus* Distant.

DISTRIBUTION: India.

Sohenus proditus Distant

Figure 438

Sohenus proditus Distant, 1910a, p. 14.

DISCUSSION: The holotype male, the only known specimen of *proditus*, is deposited in the British Museum (Nat. Hist.). I have not examined it in detail for this study.

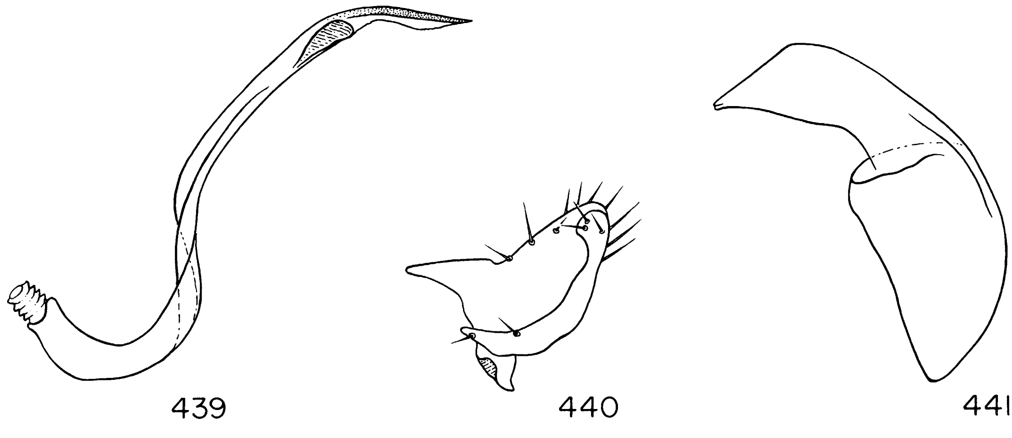
Sohenus uvarovi Ballard

Figures 439–441

Sohenus uvarovi Ballard, 1927, p. 66.

DIAGNOSIS: Recognized as noted in the generic diagnosis and by the structure of the male genitalia.

MALE GENITALIA: Figures 439–441.



FIGS. 439–441. *Sohenus uvarovi*, male genitalia. 439. Vesica. 440. Left paramere. 441. Phallotheca.

DISTRIBUTION: South India.

SPECIMEN EXAMINED: SOUTH INDIA, T. V. Campbell, BM 1930-50 (BMNH), 1♂.

TRICHOPHORELLA REUTER

Trichophorella Reuter, 1905, p. 20; Schuh, 1974, pp. 114–115.

DIAGNOSIS: Recognized by the elongate parallel-sided body form, the flattened anterior pronotal collar, the setiform parempodia, the prognathous head, the longitudinally sulcate vertex, and vertical, laterally-flattened clypeus, and the pinkish or light reddish coloration.

MALE GENITALIA: Vesica elongate, sinuous, attenuated apically, with large subapical secondary gonopore; phallotheca more or less linear without a strong right angle bend, with or without a spinelike projection arising near midpoint (see fig. 447); left paramere with a large sensory process with variable hook or spinelike projections; the right paramere small and lanceolate.

FEMALE GENITALIA: Posterior wall a simple sclerotized plate (Schuh, 1974).

TYPE SPECIES: *Trichophorella sordidipennis* Reuter.

DISTRIBUTION: Ethiopian Africa, New Guinea, and the Philippines (see discussion).

DISCUSSION: A single female specimen of *Trichophorella* in poor condition from San Jose, Mindoro, Philippine Islands is deposited in the California Academy of Sciences.

Trichophorella papuana, new species
Figures 442–447

DIAGNOSIS: Recognized by the structure of the vesica (fig. 445).

DESCRIPTION: Length apex tylus-cuneal fracture 3.98, width pronotum 1.23; elongate parallel-sided; coloration light reddish or reddish brown.

Body surface smooth, dull or very weakly shining; dorsum with decumbent setae and a very few longer semierect setae; mesofemoral and metafemoral trichobothria not visible under dissecting scope in available specimens; all tibiae with several rows of minute dark spines and several rows of semierect dark spines about as long as the tibial diameter.

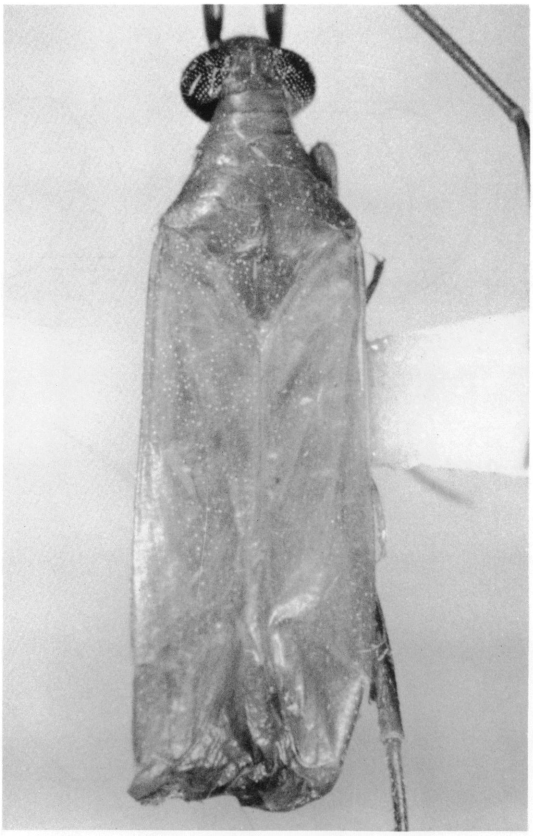
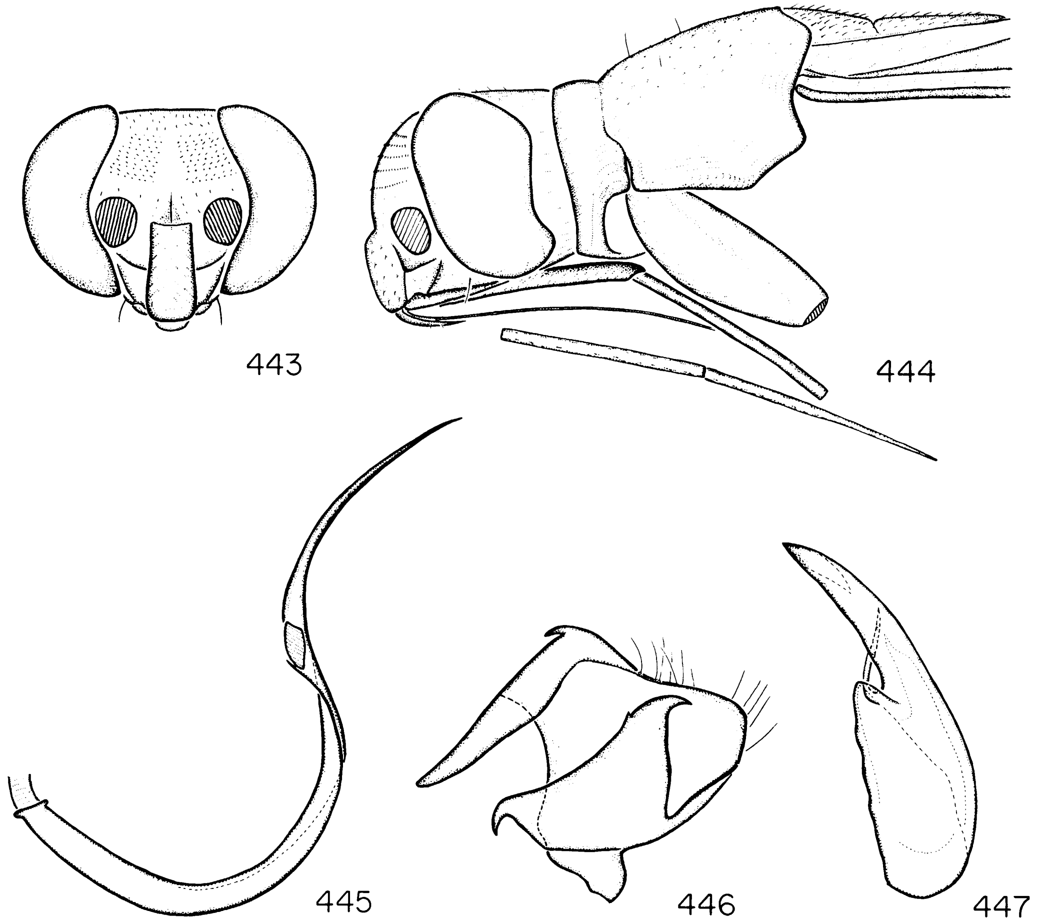


FIG. 442. *Trichophorella papuana,* holotype.

Head globose as viewed from above; frons broadly rounded with several transverse striae (fig. 443); vertex longitudinally sulcate; eyes nearly hemispherical as viewed from above, occupying entire height of head in lateral view, nearly contiguous with anterior margin of pronotum (fig. 444); antennae inserted at about middle of anterior margin of eye; antennal fossa contiguous with anterior margin of eye, eye very weakly emarginate (fig. 443); antennal segment one longer than width of head, enlarged, cylindrical, segment two about one-half the diameter of segment one, cylindrical and of uniform diameter; segments three and four of equal diameter and of somewhat lesser diameter than segment two; clypeus vertical, compressed laterally; keel-like; apex of rostrum surpassing posterior coxae; pronotum narrowed anteriorly, lateral margins nearly straight; posterior margin deeply excavated across mesoscutum; anterior margin of pronotum somewhat sinuous with a wide flattened collar, demarcated by a distinct impression; mesoscutum broadly ex-



FIGS. 443–447. *Trichophorella papuana.* 443. Frontal view of head, ♂. 444. Lateral view of head and prothorax, ♂. 445. Vesica. 446. Left paramere. 447. Phallotheca.

posed, separated from scutellum by deep transverse impression; scutellum weakly elevated; lateral corial margin nearly straight; cuneal incisure obsolete, cuneal fracture directed anteriorly; metatarsal segments two and three subequal in length, metatarsal segment one about one-half length of segment two; claws long, gently curved, slender, pulvilli subbasal, minute; parempodia setiform, parallel.

MALE GENITALIA: Figures 445–447.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: This species is named for its occurrence in Papua New Guinea.

DISTRIBUTION: Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Western Highlands Prov.:* Wum, Upper Jimmi Valley, 840 m., July 17, 1955, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH), 1♂. PAPUA NEW GUINEA: *Central Prov.:* Daradae Plantation, 80 km. N to Port Moresby, 500 m., September 6, 1959, at light (Maa; Bishop), 1♂.

DISCUSSION: All known specimens from New Guinea were collected at lights. Nothing is yet known of the habits of the genus. See also discussion under *Azizus.*

TRIBE LEUCOPHOROPTERINI

LASIOLABOPS POPPIUS

Lasiolabops Poppius, 1914a, pp. 26–27.

DIAGNOSIS: Recognized by the relatively large size, range length apex tylus-cuneal fracture 2.25–3.08, range width pronotum 1.05–1.39; the head very broad and short in dorsal view, nearly as wide as maximum width of pronotum, the frons projecting at least slightly beyond the eyes and the tylus always visible in dorsal view (figs. 450–452), the genae always relatively wide and nearly horizontal (fig. 461), the eyes relatively short in lateral view (fig. 462), the generally dark coloration, the distinctive, white, appressed, transversely, grooved pubescence (figs. 453–455), the relatively small male genitalia in comparison to the total size of the bug, the thickened first

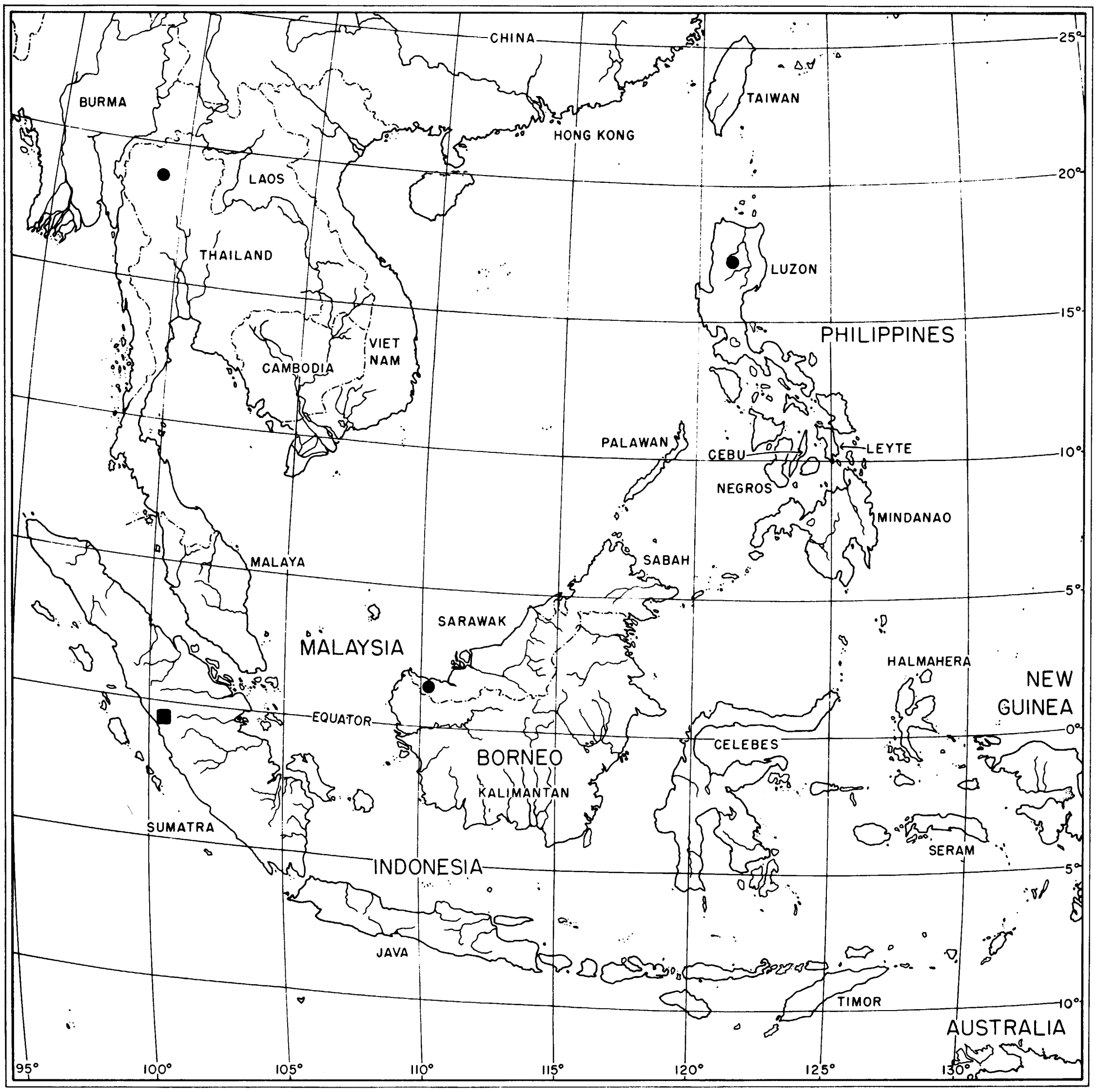

CHINA
BURMA
HONG KONG
TAIWAN
LAOS
THAILAND
LUZON
VIET NAM
CAMBODIA
PHILIPPINES
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
SABAH
MALAYA
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 448. Distribution of *Lasiolabops cosmopolites* (●) and *L. irianicus* (■) in part.

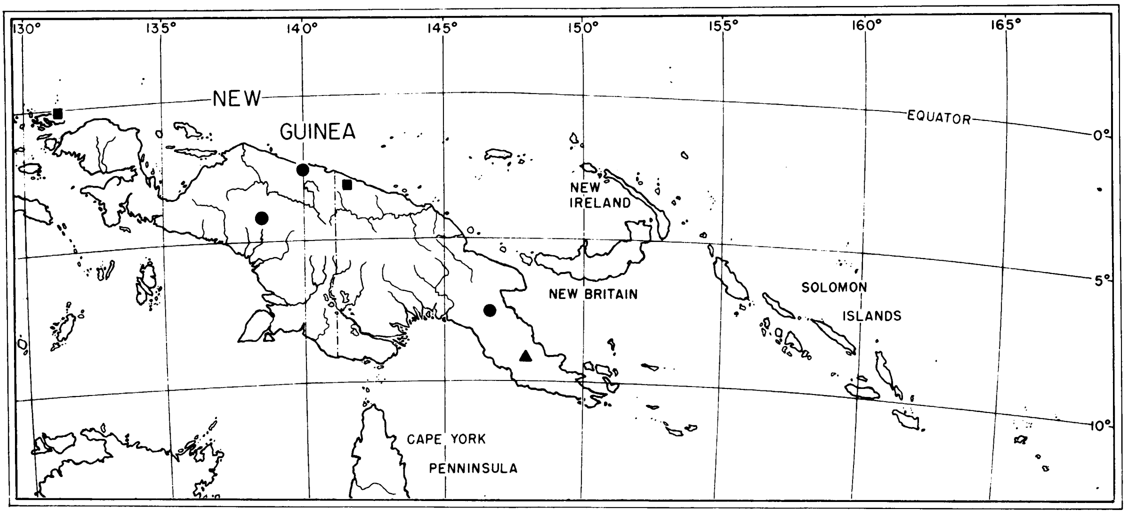


FIG. 449. Distribution of *Lasiolabops* spp. *L. cosmopolites* (●); *L. irianicus* (■) in part; *L. kokoda* (▲).

antennal segment, the long, tubular, curving second antennal segment, and the claws thickened at the base and of moderate length with a series of denticles ventrally (figs. 458–460), the spatulate parempodia (fig. 458), and the small pulvilli (figs. 458–460); meso- and meta-femoral trichobothrial patterns as in figures 456 and 457; metathoracic scent-gland evaporatory area as in figure 453.

Male Genitalia: Vesica relatively short, stout, at least weakly sigmoid and twisted, secondary gonopore always developed, vesica at most with very weak apical projections (figs. 463, 466, 469, 472); phallotheca L-shaped, usually rather elongate distally (figs. 464, 467); left paramere with posterior process elevated or not, elongate or not, and with setae aggregated or not (figs. 468, 471, 474).

Female: Very similar in structure to male. Probably always macropterous.

Female Genitalia: Posterior wall simple.

Type Species: *Lasiolabops obscurus* Poppius.

Distribution: Figures 448 and 449. West and East Africa, east to the Philippines in the north and New Guinea in the south.

Discussion: *Lasiolabops* has previously been placed in the Phylini. The size and structure of the male genitalia strongly suggest a relationship with the Leucophoropterini and the structure of the head is very similar to that found in some species I have placed in *Sejanus* (e.g., *S. ansevata* and *S. hongkong*).

Lasiolabops cosmopolites, new species

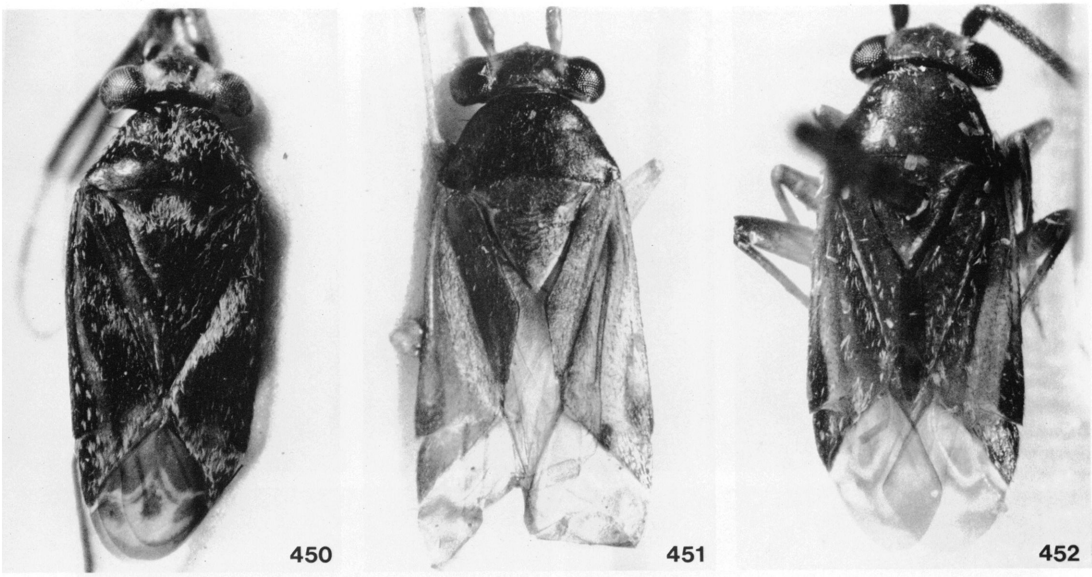
Figures 448, 449, 452, 461–468

Diagnosis: Recognized by its relatively small size, variable brownish to reddish coloration, and the form of the male genitalia (figs. 463–468).

Description: Macropterous male. Relatively small, length apex tylus-cuneal fracture 2.51, width pronotum 1.19; dorsum generally brownish to castaneous, including antennal segments one and two, most of thoracic pleura and abdomen, face below eyes, labium, antennal segments three and four, all coxae and most of remainder of legs, and metathoracic scent-gland evaporatory area yellow to white; costal half of cuneus and adjacent exocorium often strongly reddish; membrane generally smoky, veins lighter in addition to a transverse fascia posterior to cells (fig. 452); vertex narrowly along mesial margin of eyes yellowish.

Entire body surface smooth, dull; dorsum covered with reclining, brown, simple setae; dorsum, thorax laterally and abdomen clothed with appressed, white, flattened setae (as in figs. 453–455); antennae generally with recumbent vestiture, ventral surface of segment two with a fringe of erect fine setae.

Structure as in generic diagnosis, head only slightly projects beyond anterior margin of eyes in dorsal view (fig. 462); antennal segment one short and stout (fig. 452), antennal



FIGS. 450–452. *Lasiolabops* spp. 450. *L. irianicus,* holotype. 451. *L. kokoda,* holotype. 452. *L. cosmopolites,* holotype.

segment two distinctly longer than pronotal width.

MALE GENITALIA: Figures 463–468. Structure somewhat variable over range of species.

FEMALE: See generic diagnosis.

FEMALE GENITALIA: Posterior wall simple.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its wide distribution; from the Latin, *cosmopolites.*

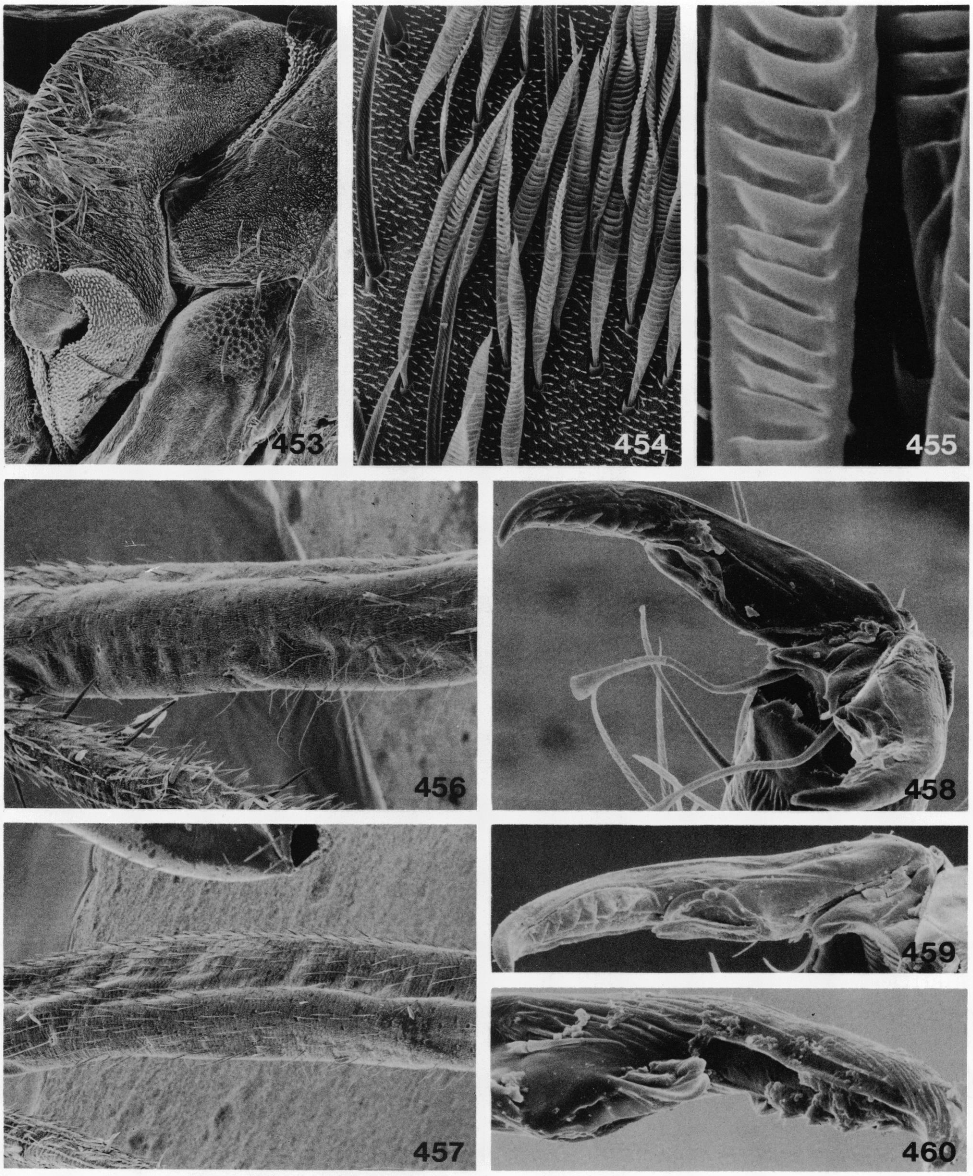
DISTRIBUTION: Figures 448 and 449. Sri Lanka west to Indochina and the Philippine Islands, south to New Guinea.

HOLOTYPE ♂: MALAYSIA: *Sarawak:* Bau District, Bidi, 90–240 m., September 3, 1958, at light, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 1♂. INDONESIA: *West Irian:* River Tor Mouth, 4 km. E of Hol Maffen, July 19, 1959 (Maa; Bishop), 1♂; Swart Val., Karubaka, 1400–1600 m., November 9, 1958, light trap (Gressitt; Bishop), 1♂. PAPUA NEW GUINEA: *Morobe Prov.:* Wau, 1200 m., May 1–15, 1962, July 30, 1961, m. v. light trap and malaise trap (Sedlacek; AMNH, Bishop), 2♂♂. [*Prov. unknown*]: Eliptamin Valley, 1200–1350 m., August 16–30, 1959 (Brandt; Bishop), 1♂. PHILIPPINE ISLANDS: *Luzon:* Mountain Prov., Liwo, 8 km. E of Mayoyao, 1000–1300 m., June 7–8, 1967, light trap (Torrevillas; Bishop), 1♂; Mountain Prov., Mayoyao-Ifugao, 1200–1500 m., light trap (Torrevillas; AMNH, Bishop), 2♂♂. SRI LANKA: *Sabarangamuwa Prov.:* Rakwana, February 27–28, 1962, light trap (Brinck, Andersson, Cederholm; Lund), 6♂♂. THAILAND: *Chiangmai Prov.:* Ban-tin-doi, 310 m., November 13–14, 1957, malaise trap (Gressitt; Bishop), 2♂♂.

ADDITIONAL SPECIMENS: INDIA: Assam, Chabua, October 28, 1943 (Hardy; USNM), 1♀. INDONESIA: *West Irian:* Bodem, 11 km. SE of Oeberfareu, 100 m., July 7–17, 1959 (Maa; Bishop), 1♀; River Tar Mouth, 4 km. E of Hol Maffen, July 19, 1959 (Maa; Bishop), 1♀. MALAYSIA: *Sabah Prov.:* Beltotan near Sandakan, August 1927 (BMNH), 1♀. *Sarawak:* Bau District, Lake Area, August 30, 1958 (Maa; Bishop), 1♀. PAPUA NEW GUINEA: *Northern Prov.:* Kokoda, 1200 feet, July 1933 (Cheesman; BMNH), 2♀♀. [*Prov. unknown*]: Woitape, 1550–1750 m., November 2–3, 1965 (Sedlacek; Bishop), 1♀. SRI LANKA: *Sabarangamuwa Prov.:* Rakwana, February 27, 1962, at light, loc. 100 (Brinck, Andersson, Cederholm; Lund), 1♀.

DISCUSSION: I have treated this widespread taxon as a single species because no pattern



FIGS. 453–460. *Lasiolabops* spp. 453–459. *Lasiolabops* sp., ♀, Papua New Guinea, Western Highlands Prov., Upper Jimmi Valley. 453. Lateral view of metathorax. 454. Flattened setae along claval suture. 455. Detail of flattened setae. 456. Mesofemur showing trichobothria. 457. Metafemur, showing trichobothria. 458. Pretarsus. 459. Detail of claw. 460. *Lasiolabops irianicus*, ♀, Indonesia, Sumatra, Dolok Merangir, detail of claw.

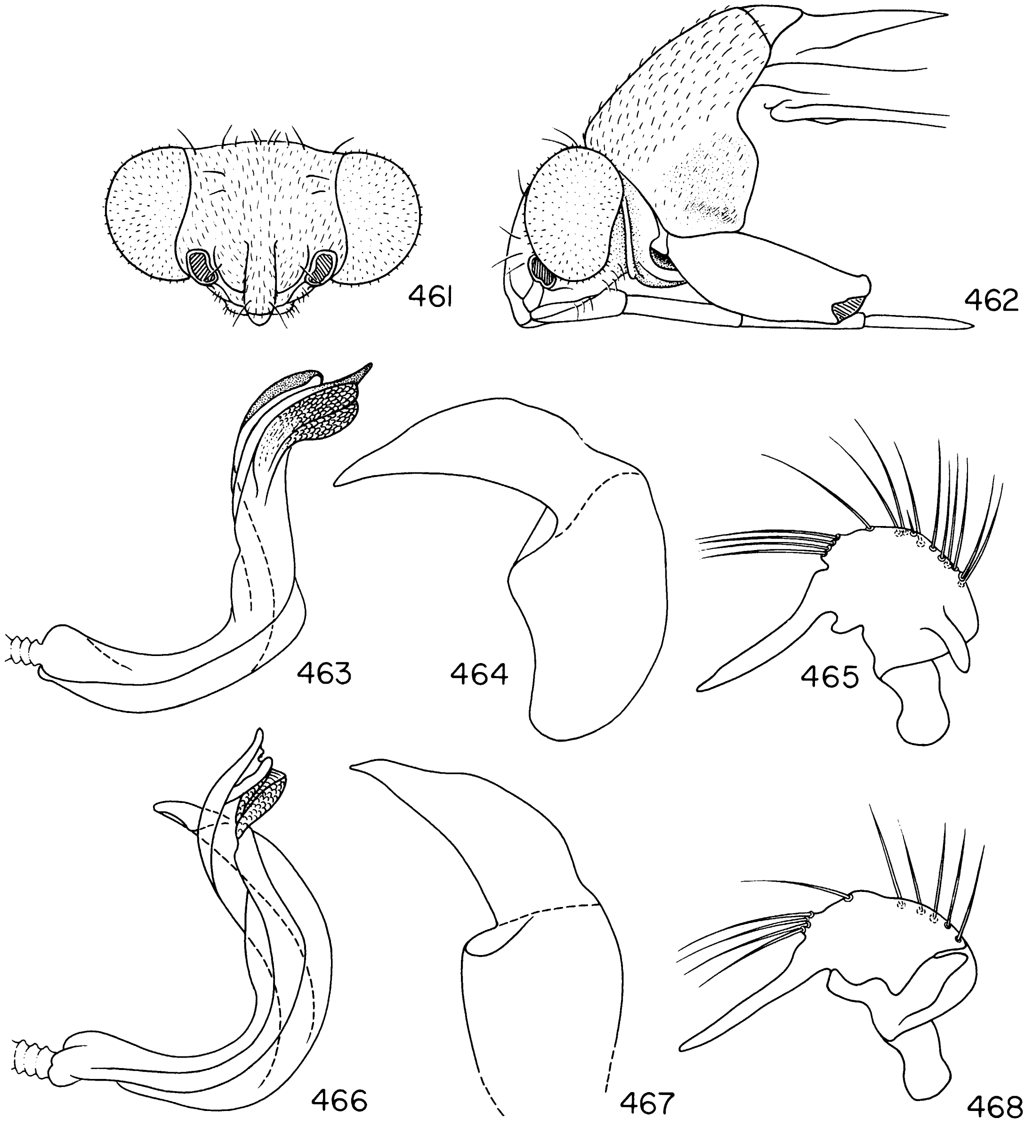
of morphological variation was discernible from available specimens.

Lasiolabops irianicus, new species

Figures 449, 450, 469–471

DIAGNOSIS: Recognized by its large size, dense but irregular covering of white appressed setae, deep castaneous coloration with distinctive and strongly contrasting white markings, the head strongly projecting beyond the anterior margin of the eyes, the long first antennal segment (fig. 450), and the structure of the male genitalia (figs. 469–471).

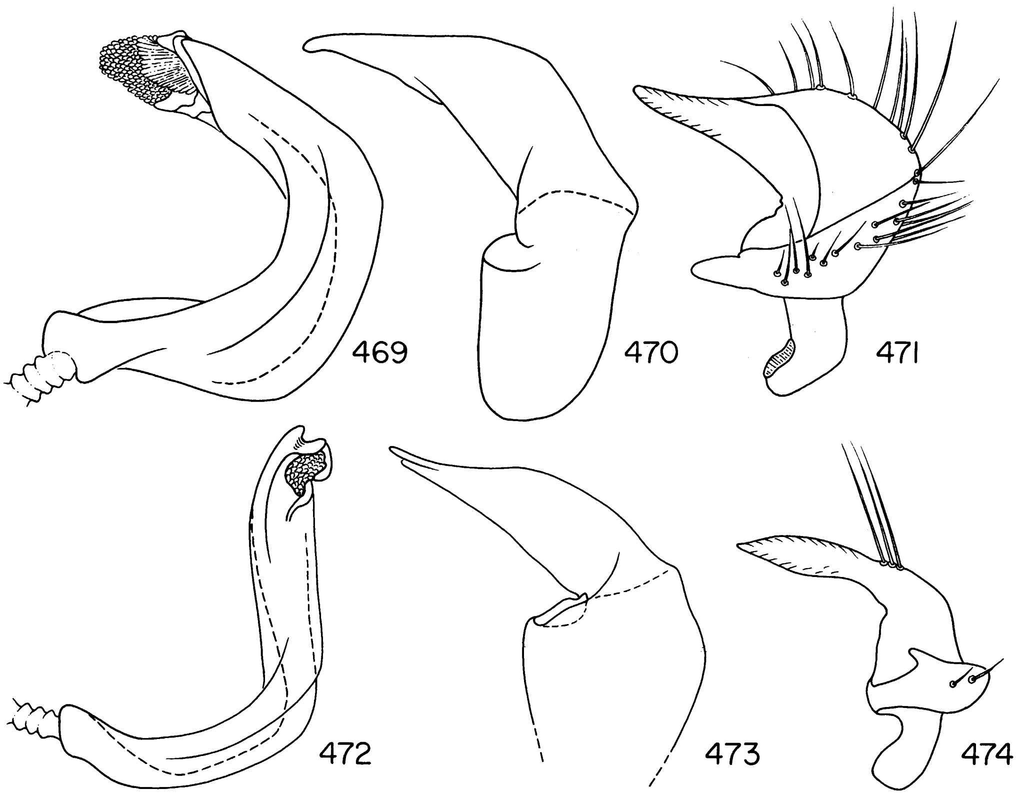
DESCRIPTION: Macropterous male. Large,



FIGS. 461–468. *Lasiolabops cosmopolites.* 461. Frontal view of head, ♂. 462. Lateral view of head and prothorax, ♂. 463–465. Ceylon, Sabarangamuwa Prov., Rakwara. 463. Vesica. 464. Phallotheca. 465. Left paramere. 466–468. Malaysia, Sarawak Prov., Bau District, Bidi. 466. Vesica. 467. Phallotheca. 468. Left paramere.

length apex tylus-cuneal fracture 3.08, width pronotum 1.39; general coloration castaneous to blackish; vertex broadly on mesial margin of eyes, head below eyes and antennal fossae, prothorax below level of ventral margin of eyes, ventral surface of procoxae, and metathoracic scent-gland evaporatory area white; proximal half of antennal segment three light; membrane very dark with white along and posterior to veins (fig. 450).

Body surface smooth, dull; dorsum with reclining dark simple setae; dorsum irregularly (fig. 450), and most of thoracic pleuron and vertex covered with appressed, flattened, white setae (figs. 453–455); all antennal segments with short recumbent vestiture, seg-



FIGS. 469–474. *Lasiolabops* spp., male genitalia. 469–471. *L. irianicus*. 469. Vesica. 470. Phallotheca. 471. Left paramere. 472–474. *L. kokoda*. 472. Vesica. 473. Phallotheca. 474. Left paramere.

ment one with many heavy, suberect, black setae, segment two with a few, erect, fine setae.

Structure generally as in generic diagnosis; head projecting beyond anterior margin of eyes by distance nearly equal to length of an eye; antennal segment one long, about equal to width of vertex, antennal segment two much longer than pronotal width.

MALE GENITALIA: Figures 469–471.

FEMALE: See generic diagnosis.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurence in West Irian.

DISTRIBUTION: Figure 449. New Guinea.

HOLOTYPE ♂: INDONESIA: *Irian Jaya:* Mt. Nok, Waigeu Camp 1, 2500 feet, May 1938, L. E. Cheesman collector; deposited in the British Museum (Nat. Hist.).

ADDITIONAL SPECIMENS: Same data as holotype (BMNH), 1♂. INDONESIA: *Sumatra:* Dokok Merangir (Diehl; AMNH), 1♂. PAPUA NEW GUINEA: *West Sepik Prov.:* Torricelli Mts., Mokai Village, 750 m., January 1–23, 1959 (Brandt; Bishop), 1♂.

Lasiolabops kokoda, new species

Figures 449, 451, 472–474

DIAGNOSIS: Similar in appearance and coloration to *cosmopolites*; antennal segment two somewhat longer and more slender than in *cosmopolites*; male genitalia also distinctive (figs. 472–474).

DESCRIPTION: Macropterous male. Relatively small, length apex tylus-cuneal fracture 2.58, width pronotum 1.19; coloration very similar to *cosmopolites.*

Surface texture and vestiture very similar to *cosmopolites.*

Structure as in *cosmopolites* except antennal segment one slightly longer and more

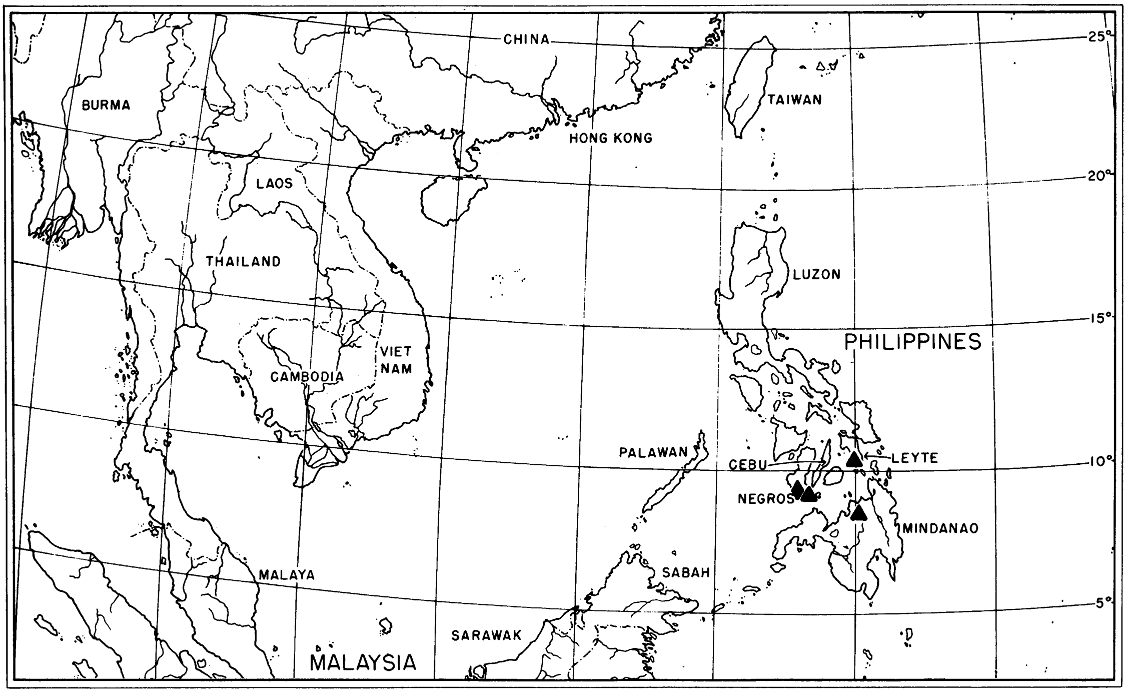


FIG. 475. Distribution of *Leucophoroptera philippinensis* (▲) and unidentified specimens (◆).

slender and antennal segment two distinctly shorter (see measurements).

MALE GENITALIA: Figures 472–474.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 449. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Northern Prov.:* Kokoda, 1200 feet, July 1933, L. E. Cheesman collector; deposited in the British Museum (Nat. Hist.).

PARATYPE: Same data as holotype, except May 1933 (BMNH), 1♂.

LEUCOPHOROPTERA POPPIUS

Leucophoroptera Poppius, 1921, p. 56; Schuh, 1974, pp. 304–305; Carvalho and Gross, 1982, pp. 35–36.

DIAGNOSIS: *Leucophoroptera novoirlandense, L. philippinensis,* and *L. solomonensis* are all characterized by a longitudinally short and dorsoventrally elongate head with the height of the eyes nearly equal to the height of the head (see figs. 490, 492, 497), the tylus never visible in dorsal view, the second antennal segment distinctly longer than the width of the pronotum (in contrast to most *Sejanus* species), and the well-developed anterior hemelytral fascia; the male genitalia very similar to those found in many *Sejanus* species and in members of the *Ctypomiris* and *Gulacapsus* groups; posterior wall in the female simple as determined by examination of specimens of *L. quadrimaculata* Poppius.

DISCUSSION: Poppius (1921) originally described *Leucophoroptera* with two included species from New South Wales, Australia, *quadrimaculata* Poppius and *fasciatipennis* Poppius, both from female specimens. Carvalho and Gross (1982) have recently described four additional species from Australia in *Leucophoroptera,* treating them as congeneric with *quadrimaculata.* They transferred *fasciatipennis* Poppius to a new genus *Blesingia* Carvalho and Gross. Both sexes are not available for all species treated by Carvalho and Gross (1982). It is therefore difficult to evaluate their generic concepts, be-

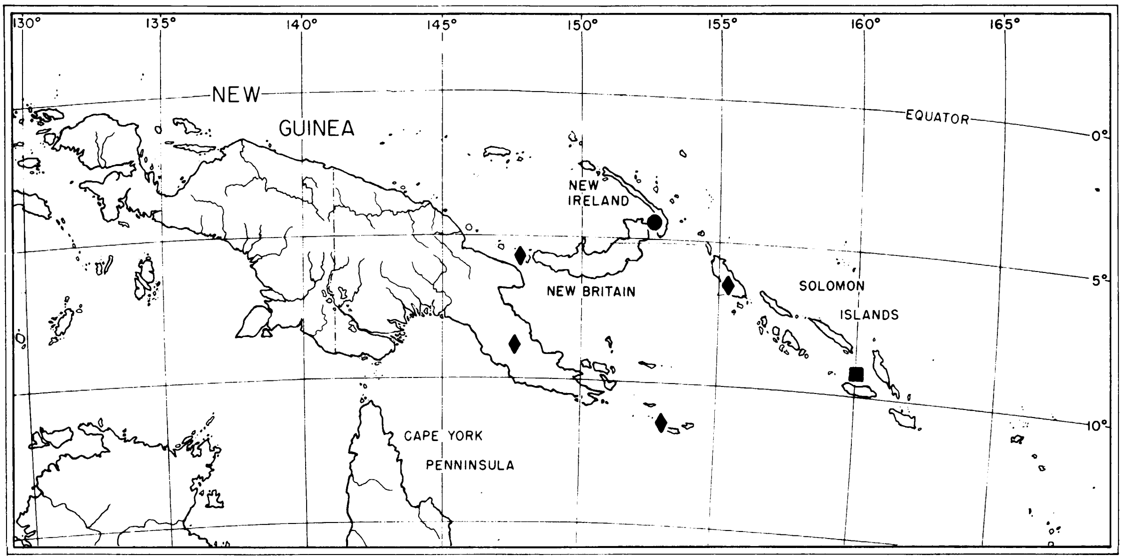


FIG. 476. Distribution of *Leucophoroptera novoirlandense* (●), *L. solomonensis* (■), and unidentified specimens (◆).

cause many of the generic characters they used involve the structure of the head, which shows strong sexual dimorphism in many members of the group.

There seems to be little doubt that all species placed in *Leucophoroptera* and *Blesingia* by Carvalho and Gross belong to the Leucophoropterini, based on genitalic structure and the color pattern of the hemelytra. However, because of the difficulty of determining generic limits, I have taken a conservative approach and placed the three species described as new below in *Leucophoroptera,* until we have a better grasp of variation with the group and especially the nature of sexual dimorphism within this group of genera.

ADDITIONAL SPECIMENS: Three male and two female specimens, possibly representing as many as five species related to the three new species described below, bear the following data: PHILIPPINE ISLANDS: *Negros:* Dumaguete (AMNH), 1♂. PAPUA NEW GUINEA: *Bougainville Prov.:* Kokure (Bishop), 1♀. *Milne Bay Prov.:* Louisade Archipelago, Mt. Rossel (AMNH), 1♂. *Morobe Prov.:* Umboi Island, Semoto Awelkom (Bishop), 1♂. *Northern Prov.:* Kokoda (Bishop), 1♀.

Three male and three female specimens (Bishop) from New Guinea appear related to *fasciatipennis* Poppius, in that the head is not so short, the gula is longer, and the body is somewhat larger and heavier than in *quadrimaculata.*

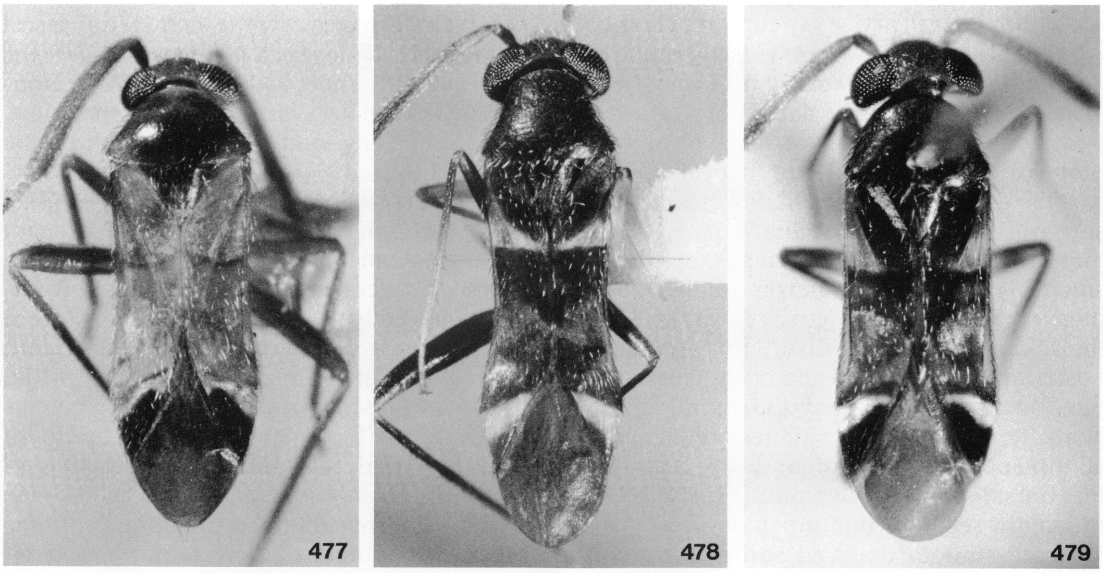
A single female specimen from New Guinea (Bishop) appears related to *Collessicoris bellissimus* Carvalho and Gross.

A final female specimen (Bishop) from Fiji appears to belong to the group of genera related to *Leucophoroptera.*

Leucophoroptera novoirlandense,
new species
Figures 476, 477, 489, 490

DIAGNOSIS: Recognized by the golden coloration, the castaneous cuneus with the contrasting white basal fascia, the transparent fasciae anteriorly and posteriorly on the corium, the longitudinally very short head with the large eyes which leave the genae exposed by about the diameter of the metatibiae, and the dimensions.

DESCRIPTION: Macropterous male. Vaguely antlike. Small, elongate, length apex tylus-cuneal fracture 1.55, width pronotum 0.69; general coloration golden to orange, pronotum posteromesially, mesoscutum, cuneus



FIGS. 477–479. *Leucophoroptera* spp. 477. *L. novoirlandense,* holotype. 478. *L. philippinensis,* holotype. 479. *L. solomonensis,* holotype.

posteriorly, posterior one-half of abdomen, and most of antennal segments three and four castaneous; corium just posterior to level of apex of scutellum and exocorium at level of apex of claval commissure rather broadly transparent, adjacent clavus and endocorium, pruinose, forming distinct light transverse fasciae; basal one-half of cuneus irregularly white (fig. 477).

Body surface smooth, shining, hemelytra granulose, dorsum including head covered with suberect, weakly shining, light brown setae; interior surface of antennal segment one with a few short erect fine spines, antennae generally covered with short, neat, reclining vestiture; eyes with short interommatidial setae; pronotum with an erect spine on anterolateral angles; all tibiae with reclining common setae and some pale reclining spines about as long as tibial diameter; pro- and meso-tibiae with a row of tiny black spicules dorsally and ventrally, metatibiae with several rows.

Head transverse in dorsal view although not strongly flattened anteroposteriorly, elongate but not strongly so in lateral view, not conspicuously rounded in frontal view; vertex declining anteriorly, posterior margin elevated and finely carinate, distinctly concave between eyes; frons rounded in dorsal view, slightly projecting beyond eyes; eyes angled on posteromesial margin, obscuring anterolateral margin of pronotum, nearly straight posterolaterally, occupying about three-fourths of height of head, distinctly emarginate at antennal insertion, antennal fossae contiguous with inner margin of eyes (figs. 477, 489, 490); antennal segment one coke-bottle-shaped, somewhat stout, segment two increasing very slightly in diameter distally, diameter distinctly greater than that of segment one, curving, segments three and four of slightly smaller diameter than segment one; buccal cavity broadly oval; genae narrow, slightly wider than tibial diameter; gula very short, nearly erect; labium just reaching apex of mesocoxae; pronotum weakly swollen and elevated posteriorly, lateral margins nearly straight and conspicuously convergent anteriorly, anterior margin finely carinate and upturned, pronotum slightly elevated and sharply rounded just behind anterior margin, posterior margin straight across mesoscutum, broadly rounded posterolaterally; mesoscutum narrowly exposed mesially, much more broadly so laterally, distinctly rounded transversely, finely impressed line separating mesoscutum and scutellum laterally strongly curved posteriorly; scutellum weakly transversely rounded; hemelytra anteriorly weakly declining laterally, posteriorly nearly flat, lateral margins weakly sinuous, narrowest at level of midpoint of claval commissure; cuneal fracture weakly angled anteromesially, cuneal incisure obsolete or very shallow; large cell of membrane more or less right angled and smoothly rounded posteromesially; abdomen narrow basally, narrowly attached to thorax, elongate but distinctly broadened posteriorly, genital capsule occupying about one-fourth of length of abdomen; all femora elongate, slender, more or less rectangular, all tibiae cylindrical, of uniform diameter; metatarsal segments two and three subequal in length, segment one much shorter; claws elongate, smoothly curved, somewhat broadened basally, pulvilli small, parempodia setiform.

MALE GENITALIA: Not examined.

FEMALE: Submacropterous. Coloration as in male; eyes distinctly smaller than in male, pronotum more nearly parallel-sided and swollen in appearance; hemelytra very slightly abbreviated.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on New Ireland.

DISTRIBUTION: Figure 476. New Ireland, Bismark Archipelago.

HOLOTYPE ♂: PAPUA NEW GUINEA: *New Ireland Prov.:* SW New Ireland, ridge above "Camp Bishop," 15 km. up Kait River, 250–750 m., July 13, 1956, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but also July 10 (AMNH, Bishop), 1♂, 1♀. PAPUA NEW GUINEA: *New Ireland Prov.:* SW New Ireland, Gilingil Plantation, 2 m., July 16, 1956 (Gressitt; Bishop), 1♂.

Leucophoroptera philippinensis,
new species

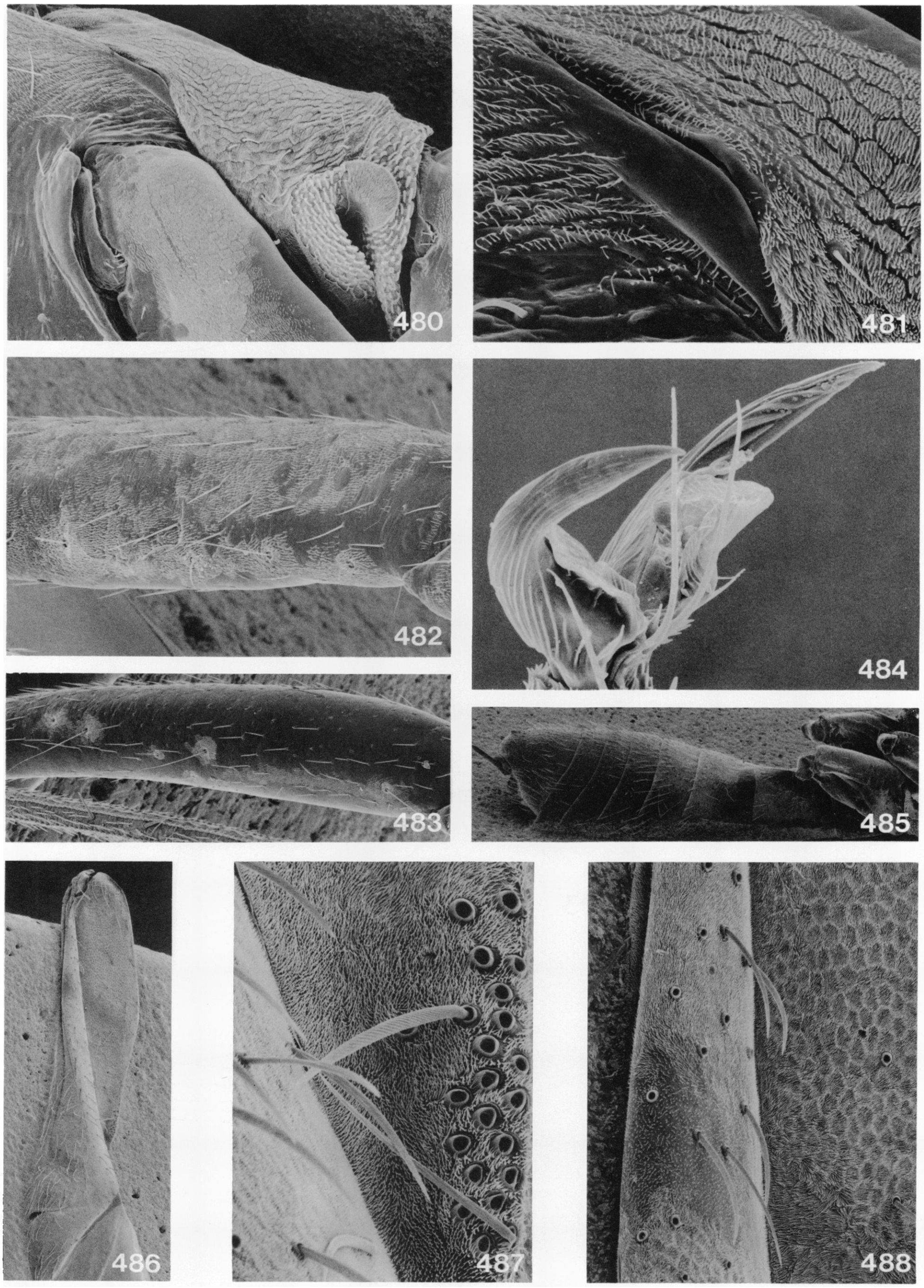
Figures 475, 478, 480–488, 491–495

DIAGNOSIS: Recognized by its elongate body form, its somewhat grayish coloration with a complete transverse white hemelytral fascia at the level of the apex of the scutellum, the longitudinally short and dorsoventrally elongate head with very large eyes in frontal view, the dimensions, and the form of the male genitalia (figs. 493–495).

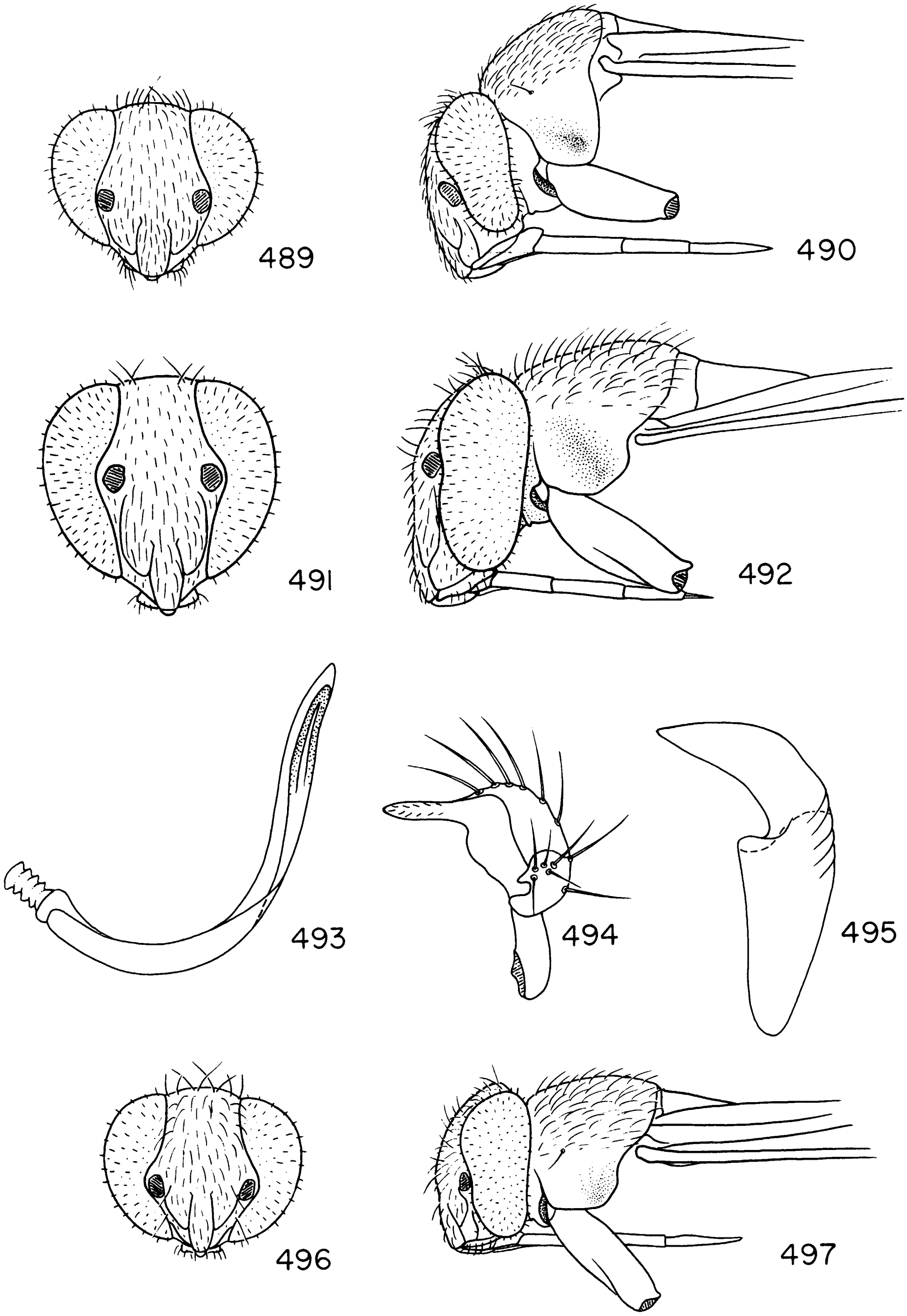
DESCRIPTION: Macropterous male. Antlike, moderately small, elongate and slender, length apex tylus-cuneal fracture 2.01, width pronotum 0.73; general coloration deep brown, dorsum weakly pruinose and grayish, corium and clavus at the level of apex of scutellum with a complete, mesially tapering white transverse fascia; basal one-half of cuneus white (fig. 478); most of antennal segment one, proximal two-thirds of antennal segment three, labium, procoxae, metacoxae distally, all trochanters, profemora, protibiae mostly, mesotibiae distally, metatibiae at extreme base, and all tarsi yellow-white.

Body surface dull, weakly pruinose, generally smooth (see figs. 478, 486–488), pronotum distinctly transversely rugose, scutellum finely rugulose, dorsum, including head, covered with reclining, weakly shining brown simple setae; interior surface of antennal segment one with a few rather short black spines, antennal segments two, three, and four with very short, neat, subappressed pubescence; eyes with short interommatidial setae; pronotum with an erect spine on anterolateral angles; meso- and meta-femoral trichobothrial patterns as in figures 482 and 483; all tibiae with short, reclining simple setae, pro- and meso-tibiae with suberect, short, light spines, metatibiae with suberect black spines about as long as tibial diameter; mesotibiae with a single row of tiny black spicules on dorsal surface, metatibiae with several rows.

Head much wider than long in dorsal view, elongate dorsoventrally in lateral view, nearly round in frontal view; head in dorsal view rounded anteriorly, concave posteriorly, partially obscuring but not closely conforming to anterior margin of pronotum; vertex strongly declining anteriorly, posterior margin more or less erect, finely carinate, nearly straight across between eyes; eyes angulate on posterior margin in dorsal view, occupying nearly entire height of head, weakly emarginate at antennal insertion, and inner mar-



FIGS. 480–488. *Leucophoroptera philippinensis*. 480. Lateral view of metathorax, showing scent-gland evaporatory area. 481. Detail of small evaporatory area. 482. Mesofemur, showing trichobothria. 483. Metafemur, showing trichobothria. 484. Pretarsus. 485. Abdomen. 486. Hemelytra. 487. Detail of apex of clavus. 488. Detail of texture of wing.



FIGS. 489–497. *Leucophoroptera* spp. 489–490. *L. novoirlandense,* ♂. 489. Frontal view of head. 490. Lateral view of head and prothorax. 491–495. *L. philippinensis,* ♂. 491. Frontal view of head. 492. Lateral view of head and prothorax. 493. Vesica. 494. Left paramere. 495. Phallotheca. 496, 497. *L. solomonensis,* ♂. 496. Frontal view of head. 497. Lateral view of head and prothorax.

gins almost parallel in frontal view; antennae inserted at middle of anterior margin of eyes, antennal fossae contiguous with inner margin of eye (figs. 478, 491, 492); antennal segment one coke-bottle-shaped, rather slender, segment two slender, increasing in diameter distally to diameter slightly greater than that of segment one, weakly curving, segments three and four very slender; buccal cavity more or less rectangular, slightly broadened anteriorly; genae narrow, no wider than protibial diameter, gula vertical, somewhat obscured by eyes, about as long as maximum diameter of antennal segment two; labium reaching to between pro- and meso-coxae; pronotum relatively narrow, nearly flat, slightly tapering anteriorly, lateral margins weakly concave, anterior margin finely carinate and upturned, slightly elevated and sharply rounded just behind anterior margin, posterior margin straight, posterolateral angles sharply rounded; mesoscutum exposed by width about equal to diameter of antennal segment two, declining posteriorly and laterally, rounded transversely, separated from scutellum by a finely impressed line curving posterolaterally; scutellum weakly rounded anteriorly; hemelytra nearly flat, corial margin distinctly sinuous, narrowest just anterior to level of apex of clavus; cuneal fracture weakly angled anteromesially, appearing nearly straight, cuneus inset basally, lateral margin weakly rounded; large cell of membrane forming a weakly oblique angle posteromesially and sharply rounded; metathoracic scent-gland evaporatory area as in figure 480; abdomen strongly narrowed basally and narrowly attached to thorax, somewhat broadened posteriorly, genital capsule occupying about one-fourth of length of abdomen (fig. 485); all femora relatively slender and tapering distally; all tibiae cylindrical, metatibiae decreasing slightly in diameter distally; metatarsal segments one and two subequal in length, segment one much shorter; claws curving, somewhat broadened basally, pulvilli small but conspicuous, parempodia setiform (fig. 484).

Male Genitalia: Figures 493–495.

Female: Unknown.

Measurements: See Appendix.

Etymology: Named for its occurrence in the Philippine Islands.

Distribution: Figure 475. Philippine Islands.

Holotype ♂: PHILIPPINE ISLANDS: *Negros Island:* Camp Lookout, Dumaguete, May 20, 1961, T. C. Schneirla and A. Reyes collectors; deposited in the American Museum of Natural History, New York.

Paratypes: Same data as holotype, except May 17–22 (AMNH), 4♂♂. PHILIPPINE ISLANDS: *Leyte Island:* Abuyog, 35 mi. S of Tacloban, July 9, 1961 (P.I. Nat Mus.–AMNH Expd.; AMNH), 1♂. *Mindanao Island:* Misamis Oriental, Gingoog, May 12, 1961, light trap (Torrevillas; Bishop), 1♂.

Leucophoroptera solomonensis,
new species

Figures 476, 479, 496, 497

Diagnosis: Structure, vestiture, and pattern of coloration similar to *novoirlandense*; general coloration of dorsum castaneous with posterior one-half of corium more reddish; antennal segment two light on proximal two-thirds, castaneous on distal one-third; dimensions also distinctive.

Description: Macropterous male. Similar to *novoirlandense* except as follows: length apex tylus-cuneal fracture 1.48 (approx.), width pronotum 0.60; general coloration castaneous, posterior half of corium distinctly reddish; pattern of hemelytral marking similar to *novoirlandense,* corium at level of apex of scutellum and at level of apex of claval commissure broadly transparent; base of cuneus irregularly white (fig. 479); antennal segment one, proximal two-thirds of antennal segment two, proximal half of antennal segment three, labial segments two, three, and four, all coxae and trochanters, profemora, proximal two-thirds of mesofemora, protibiae, distal one-half of mesotibiae and all tarsi yellow white.

Surface texture and vestiture similar to *novoirlandense*; protibiae without rows of tiny spicules.

Head similar in structure to *novoirlandense* except eyes occupying nearly entire height of head in lateral view (figs. 496, 497); antennal segment one cylindrical, increasing slightly in diameter distally, maximum diameter slightly greater than that of segment one, segments three and four very slender; labium reaching to about midpoint of mesocoxae; lateral corial margin very weakly sinuous; base of cuneus shallowly inset.

Male Genitalia: Not examined.

Female: Unknown.

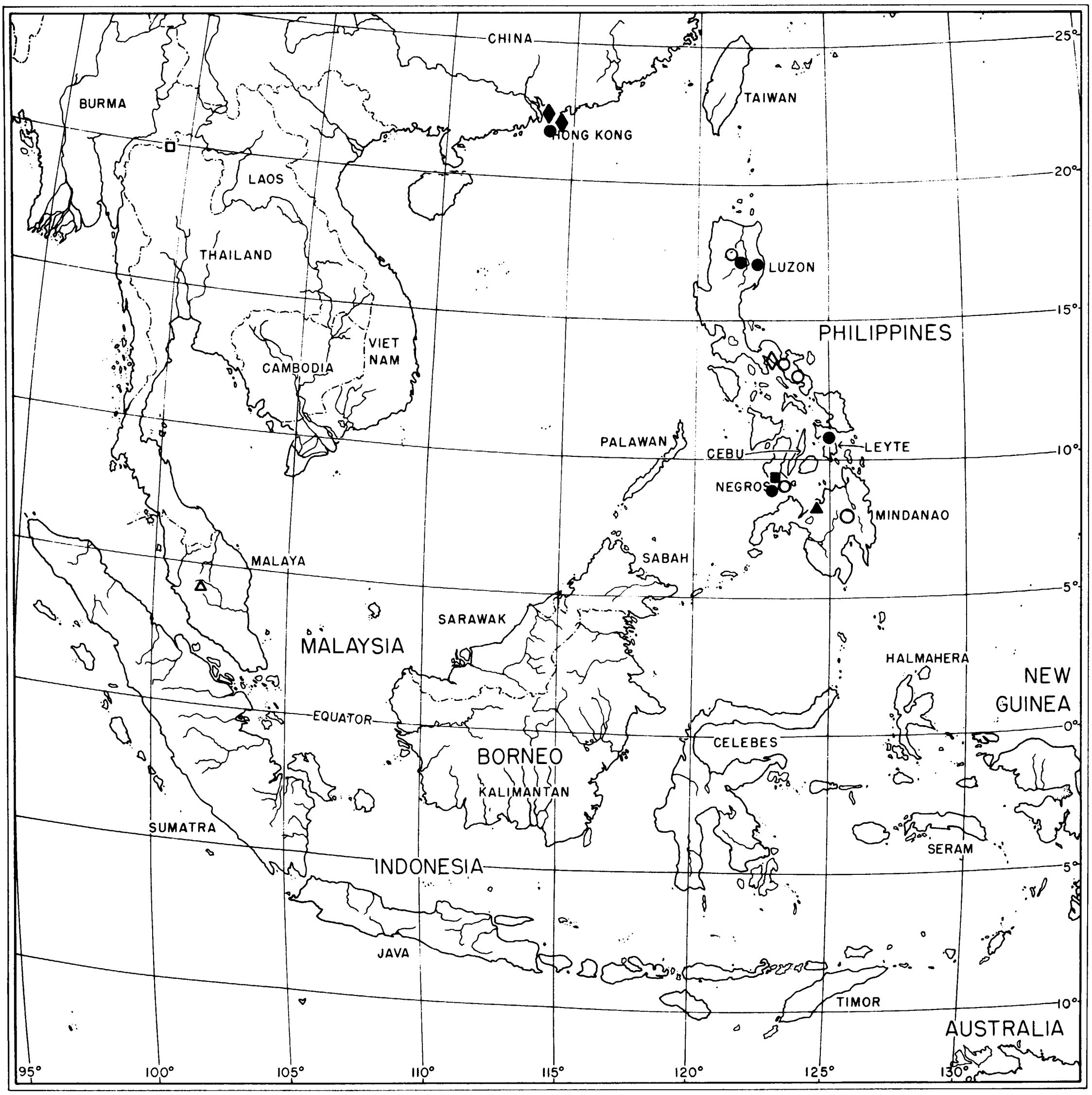

CHINA
BURMA
TAIWAN
HONG KONG
LAOS
THAILAND
LUZON
PHILIPPINES
VIET NAM
CAMBODIA
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
MALAYA
SABAH
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 498. Distribution of *Sejanus* spp. *S. ecnomioides* (△); *S. ecnomiscos* (▲); *S. funerellus* (■); *S. hongkong* (◆); *S. isarog* (○); *S. luzonicus* (◇); *S. neofunereus* (●). Also *S. funereus* from Sri Lanka and *S. priscillianus* from India.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in the Solomon Islands.

DISTRIBUTION: Figure 476. Solomon Islands.

HOLOTYPE ♂: SOLOMON ISLANDS: *NW Malaita:* Dala, June 19, 1964, malaise trap, R. Straatman collector; deposited in the B. P. Bishop Museum, Honolulu.

SEJANUS DISTANT

Sejanus Distant, 1910a, p. 20; Carvalho and Gross, 1982, pp. 7–10.

DIAGNOSIS: Macropterous males. Recognized by the small to moderate size, the abdomen narrow in elongate species and much broader in stocky species, the connexivum not expanded laterally but folded over dor-

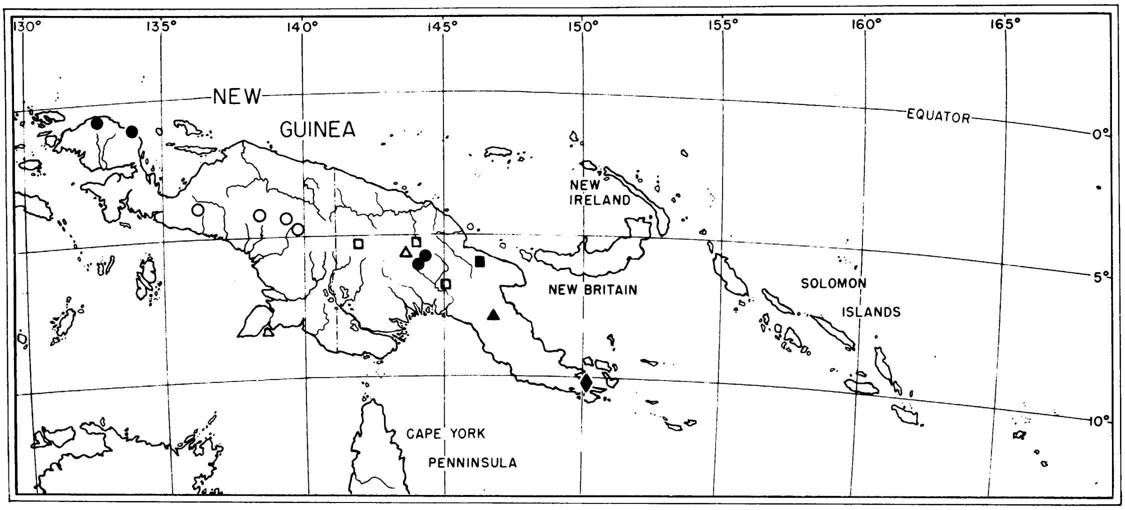


FIG. 499. Distribution of *Sejanus* spp. (continued). *S. biniguni* (◆); *S. cinnameus* (□); *S. ecnomios* (▲); *S. elongatus* (○); *S. funerioides* (△); *S. macer* (●); *S. melas* (■).

sally producing a slender appearance in most taxa, the relatively small male genital capsule, the more or less elongate weakly and smoothly curved claws (but see *umi*), the setiform parempodia, the straight and nearly parallel-sided hemelytra, the cuneus often with two separate or confluent ivory spots basally (in which case they are distinctly contrasting with the castaneous to nearly black general coloration), the head concave behind and conforming to and obscuring the anterior margin of the pronotum, the eyes large and occupying nearly the entire height of the head in lateral view, male genitalia often with simple C-shaped vesica without apical spine and with obscurely developed secondary gonopore, sometimes more or less J-shaped, more elaborately twisted, with evident secondary gonopore and with a well-developed apical spine. Appearance similar to *Campylomma* (see *C. marjorae* in particular), but distinguished by usually having a white contrasting marking basally on the cuneus, never having the row of spicules dorsally on the metafemora, and never having the pair of bladelike apical spines on the vesica.

DESCRIPTION: Macropterous male. Small- to moderate-sized, flattened, elongate ovoid, more or less parallel-sided, range length apex tylus-cuneal fracture 1.40–2.36, range width pronotum 0.75–1.09; general coloration often castaneous to black, occasionally reddish brown or pale with reddish stripes; cuneus often with two separate or confluent spots basally; coloration of appendages variable; clavus and/or corium sometimes with faint white markings posterior to apex of scutellum; body surface generally smooth, sometimes weakly rugulose, dull to moderately shining; vestiture of reclining setae, hemelytra sometimes, and less commonly entire dorsum, with flattened, recumbent, sericeous setae; anterolateral angles of pronotum with an erect fine spine.

Head transverse, usually broad relative to width of pronotum with a relatively narrow vertex, short to very short, concave behind, roughly conforming to and obscuring anterior margin of pronotum; vertex nearly flat or inclined, posterior margin flat, carinate or rounded, never elevated; eyes large, occupying nearly entire length of head in dorsal view and nearly entire height of head in lateral view; antennae inserted somewhat above ventral margin of eyes, fossae confluent with eyes, eyes distinctly to very strongly emarginate at and/or above antennal insertion; antennal segment one coke-bottle-shaped, short and stout, segment two either increasing slightly in diameter distally or slightly enlarged, cylindrical and of nearly equal diameter over entire length, segments three and four of subequal and conspicuously smaller diameter than segment two; length of anten-

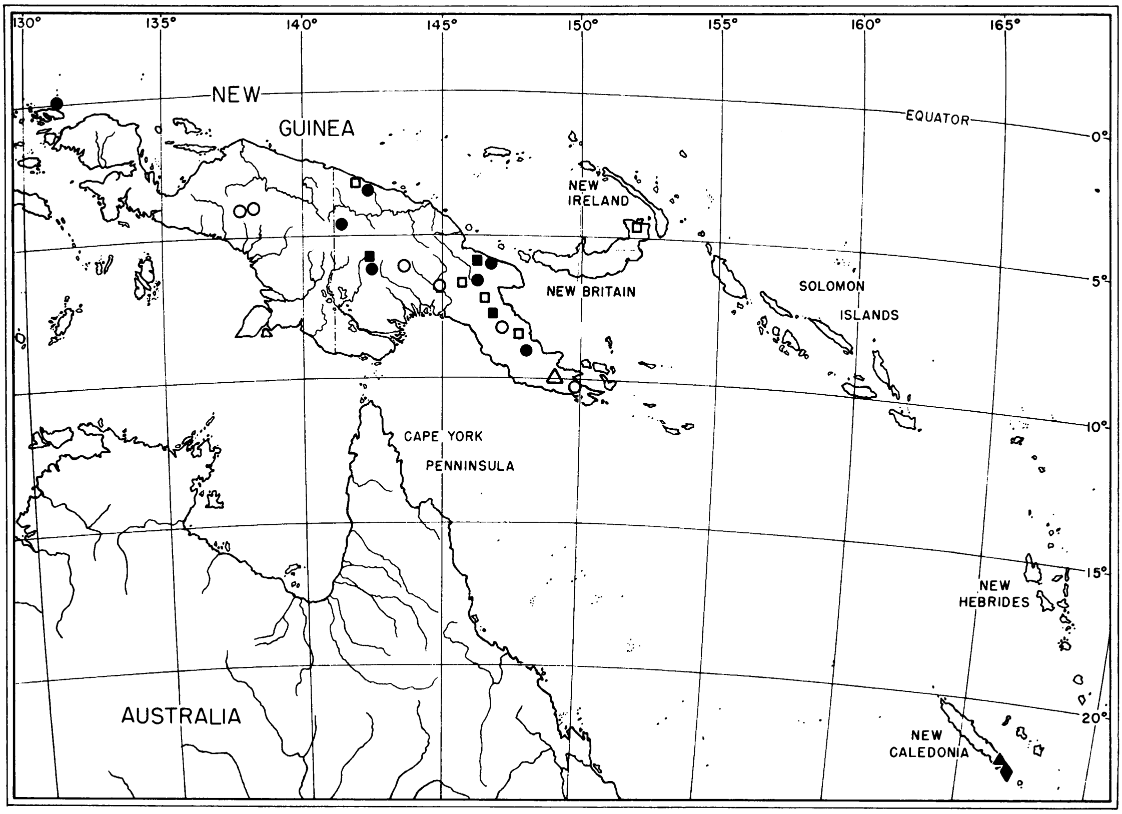


FIG. 500. Distribution of *Sejanus* spp. (continued). *S. ansevata* (◆); *S. brassi* (△); *S. novocaledonicus* (▲); *S. serrulatus* (○); *S. sinuosus* (□); *S. umi* (●). Also *S. albosignatus* from New Zealand.

nal segment two ranging from about equal to to approximately 1.40 times width of head; jugae and lora short, not protruding; genae narrow to obsolete; bucculae well developed, but not noticeably broadened, buccal cavity broadly ovoid to nearly round; gula generally obsolete; labium reaching from just anterior to apex of mesocoxae to slightly surpassing apex of metacoxae; pronotum flat or nearly so, anterior and posterior lobes not demarcated, anterior margin finely reflexed, lateral margins nearly straight to weakly convex; mesoscutum rather narrowly to broadly exposed, mesoscutum and scutellum nearly flat; hemelytra nearly flat to obviously transversely rounded; cuneal fracture angled anteromesially, cuneus from slightly to distinctly inset at incisure; cuneus broadly to elongate triangular; abdomen ranging from rather broad basally and tapered posteriorly in very small species to generally narrow over entire length; genital capsule always relatively small; large cell of membrane distinctly angulate and smoothly but sharply rounded posteromesially; pro- and meso-femora elongate rectangular, metafemora flattened, sometimes weakly to rather strongly curving on dorsal margin; all tibiae cylindrical, straight; metatarsal segment one short, segments two and three subequal in length, about two times length of segment one; claws elongate, usually weakly curving, sometimes more strongly so, not noticeably broadened basally, always with a series of angled ridges mesioventrally on distal half (figs. 507, 555, 560, etc.); pulvilli distinct but small, parempodia always setiform.

MALE GENITALIA: Vesica often C-shaped, flat, small, with at most a very weakly developed secondary gonopore, vesica sometimes J-shaped or sigmoid and twisted, secondary gonopore weakly to more or less

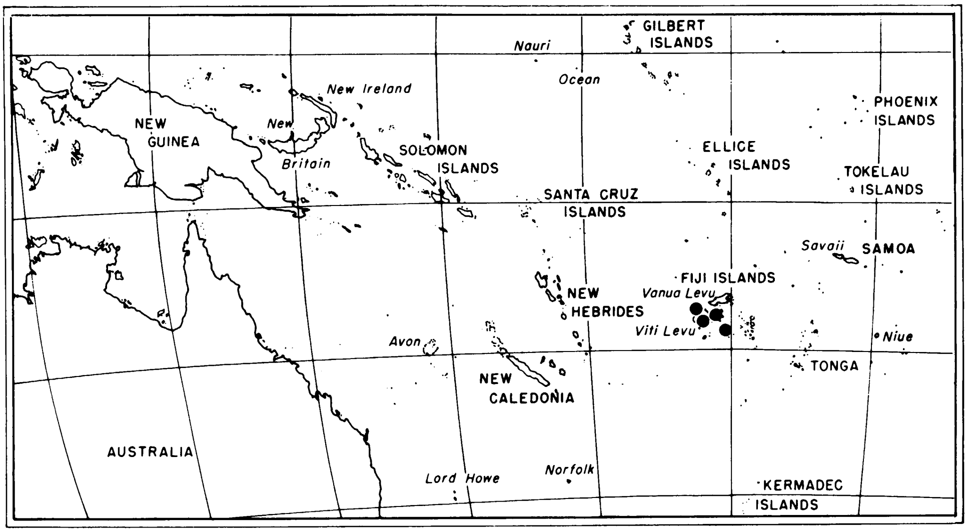


FIG. 501. Distribution of *Sejanus fijiensis.*

strongly developed, sometimes apical spine present; phallotheca usually C-shaped to L-shaped, without ornamentation, distally elongate; left paramere generally boat-shaped and typically phyline, posterior process elongate, acuminate, distinctly elevated above anterior process in lateral view, anterior process often somewhat reduced and short; left clasper occasionally greatly modified (as in figs. 545 and 548).

FEMALE: Similar in coloration, vestiture, and surface texture to males; eyes somewhat smaller and vertex relatively wider, antennal segment two more slender, hemelytra often shorter and broader, often appearing submacropterous.

FEMALE GENITALIA: Posterior wall simple.

DISTRIBUTION: India east to Fiji, north to the Philippines and Hong Kong, south to Australia and New Zealand.

DISCUSSION: The diagnosis given here for *Sejanus* consists of a composite of characters; although many known species are castaneous or nearly black and possess the ivory spots on the cuneus, some dark-colored species of similar general appearance lack the contrasting cuneal spots. Other taxa, such as *ansevata, biniguni,* and *hongkong* possess claw and genital morphologies very similar to dark-colored species, but have different distinctive colorations. The above-mentioned taxa, as well as *Sejanus novocaledonicus* in fact may not be members of the group, but are placed here until our knowledge of the fauna matures. It should be clear from this and the phylogenetic discussion at the end of the paper that *Sejanus* as here diagnosed is a grouping of convenience.

Carvalho and Gross (1982) have recently described 22 new species in the genus *Sejanus* from Australia. The majority of these appear to be congeneric with most of the species I have assigned to the group. These include, in addition to *albosignatus* (Knight), *brittoni, brunneus,* probably *fasciatus, femoralis, intermedius, leucoelytratus, mcdonaldi, neboissi, palumae, tasmaniae, uestaustralianus,* and *vividus.* For all the above, Carvalho and Gross illustrated the male genitalia, which, with the possible exception of *brittoni* and *fasciatus,* show remarkable uniformity in the structure of the vesica and the left paramere, not only among themselves, but also with species assigned by Carvalho and Gross to the genera *Aitkenia* Carvalho and Gross, *Blesingia* Carvalho and Gross, and *Collessicoris* Carvalho and Gross. This genitalic type (with the exception of *fasciatus*) agrees in many details with that found in *Sejanus funereus* Distant, the type of the genus.

Four additional species described as new by Carvalho and Gross on the basis of female specimens probably also represent *Sejanus* species, judging from the color pattern. These are: *howardae,* possibly *melaleucae, meridionalis,* and *rosei.* The remaining six species appear to belong to other genera on the basis of genitalic structure and coloration.

Sejanus leai Carvalho and Gross, although with a body form and general coloration suggestive of *Sejanus*, has the white marking on the corium rather than on the cuneus, and has a vesica which is very *Campylomma*-like in structure. *Sejanus occidentalis* Carvalho and Gross is described as having a pattern of coloration very similar to *albosignatus*. The vesica is, however, unlike all other known *Sejanus* species. *Sejanus ruber* Carvalho and Gross and *rubricatus* Carvalho and Gross have strongly sigmoid vesicae with long, heavy, apical spicules characteristic of *Campylomma*; both have color patterns which might allow for placement in *Sejanus*, but could easily be placed in *Campylomma*. *Sejanus unicolor* Carvalho and Gross does not resemble other *Sejanus* species in the structure of the vesica which has a single coil with a long apical projection. The habitus and coloration could place it in several other genera. *Sejanus unicolor* Carvalho and Gross is basically light colored with a light cuneus. No males are known. Thus, I consider its generic placement questionable.

Approximately 100 male and 290 female specimens of *Sejanus* are available in addition to those listed under the species treated below. I have dealt only with males for most species, and in addition only with taxa where several male specimens were available. This approach was taken because at present, association of males and females can be made in many cases only on the basis of locality data, and many species are distinguished with certainty only by examination of the male genitalia. I have not listed locality data for the unworked material because available specimens do not shed light on morphological diversity or distributional knowledge.

KEY TO INDO-PACIFIC *SEJANUS* SPECIES

1. Cuneus, at least posteriorly, dark brown, castaneous, or black 2
   Cuneus lighter and nearly unicolorous .. 22
2. Cuneus unicolorous dark 3
   Cuneus with contrasting ligher marking or markings along cuneal fracture 6
3. All femora yellow or very light brown; length apex tylus-cuneal fracture 2.12; male genitalia as in figures 619–621; New Guinea .... *umi*
   All femora largely castaneous to nearly black 4
4. Antennal segment one and basal half of segment two yellow-white; length apex tylus-cuneal fracture 1.51; male genitalia as in figures 567–569; Philippine Islands .... *funerellus*
   Antennal segments one and two castaneous to nearly black 5
5. All tibiae castaneous; large, broad-bodied species, length apex tylus-cuneal fracture 1.94, width pronotum 1.50; male genitalia as in figures 595–597; Eastern New Guinea .... *melas*
   All tibiae yellowish with castaneous infusion; more elongate species, length apex tylus-cuneal fracture 1.91, width pronotum 0.90; male genitalia as in figures 622–624; New Guinea, New Britain .... *sinuosus*
6. Relatively small species, length apex tylus-cuneal fracture 1.63 or less 7
   Larger species, length apex tylus-cuneal fracture 1.69 or greater 9
7. Metatibiae infuscate proximally; all femora castaneous at tibiofemoral articulation; length apex tylus-cuneal fracture 1.63; male genitalia as in figures 564–566; India, Sri Lanka .... *funereus*
   Metatibiae yellow-white over entire length; at least pro- and meso-femora pale at tibiofemoral articulation 8
8. Small species, length apex tylus-cuneal fracture 1.45–1.53; femora pale at tibiofemoral articulation; male genitalia as in figures 601–603; Hong Kong, Philippine Islands .... *neofunereus*
   Larger species, length apex tylus-cuneal fracture 1.61–1.64; femora distinctly lighter on distal one-half than proximally; male genitalia as in figures 589–591; Philippine Islands .... *luzonicus*
9. Body elongate and slender, ratio of length apex tylus-cuneal fracture/width pronotum 2.19 or greater 10
   Body broader, ratio of length apex tylus-cuneal fracture/width pronotum 2.10 or less 14
10. Corium light subbasally; clavus unicolorous brown to castaneous 11
    Corium unicolorous brown to castaneous 12
11. All coxae castaneous; length apex tylus-cuneal fracture 2.02; male genitalia as in figures 529–531; New Guinea .... *elongatus*
    All coxae yellow white; length apex tylus-cu-

neal fracture 2.26; male genitalia as in figures 511–513; New Zealand and Australia .... *albosignatus*

12. Clavus with white fascia just posterior to scutellum; length apex tylus-cuneal fracture 1.77; male genitalia as in figures 625–627; Eastern New Guinea .... *spiculatus*
    Clavus unicolorous castaneous 13
13. Procoxae yellowish; length apex tylus-cuneal fracture 1.93; India, West Bengal .... *priscillianus*
    Procoxae castaneous, length apex tylus-cuneal fracture 2.03; male genitalia as in figures 592–594; New Guinea .... *macer*
14. Antennal segment one yellow or yellow-white 15
    Antennal segment one dark brown or castaneous 18
15. General coloration cinnamon with faint ivory markings on cuneus; length apex tylus-cuneal fracture 1.96; male genitalia as in figures 526–528; Eastern New Guinea .... *cinnameus*
    General coloration castaneous to nearly black 16
16. Moderate sized, range length apex tylus-cuneal fracture 1.79–1.87; clavus with weak white fascia just posterior to scutellum; male genitalia as in figures 523–525; Eastern New Guinea .... *brassi*
    Larger species, length apex tylus-cuneal fracture greater than 1.90 17
17. Setae on dorsum weakly shining and recumbent; length apex tylus-cuneal fracture 2.04; male genitalia as in figures 580–582; Eastern New Guinea .... *funerioides*
    Setae on dorsum simple, reclining and brown and sericeous, woolly, and subappressed; length apex tylus-cuneal fracture 1.96; male genitalia as in figures 607–609; New Guinea .... *serrulatus*
18. Procoxae yellow-white; length apex tylus-cuneal fracture 1.88; male genitalia as in figures 561–563; Fiji .... *fijiensis*
    Procoxae castaneous 19
19. Vesica simple, flat, C-shaped, without terminal spine, secondary gonopore moderately developed and sclerotized (fig. 583); length apex tylus-cuneal fracture 1.79; male genitalia as in figures 583–585; Philippine Islands .... *isarog*
    Vesica J-shaped or weakly sigmoid, with a terminal spine (figs. 543, 546, 549); left paramere greatly expanded (figs. 545, 548) 20
20. Large species, length apex tylus-cuneal fracture 2.15; male genitalia as in figures 543–545; Eastern New Guinea ..... *ecnomios*
    Smaller species, length apex tylus-cuneal fracture less than 1.98 21
21. Larger species, length apex tylus-cuneal fracture 1.92; male genitalia as in figure 549; Malaya .... *ecnomioides*
    Smaller species, length apex tylus-cuneal fracture 1.83; male genitalia as in figures 546–548; Philippine Islands ...... *ecnomiscos*
22. Hemelytra with yellow background coloration with blood red spots; male genitalia as in figures 604–606; New Caledonia .... *novocaledonicus*
    Dorsum without blood red spots 23
23. Head, pronotum, and scutellum brown, generally contrasting with yellowish hemelytra; length apex tylus-cuneal fracture 1.94; male genitalia as in figures 514–516; New Caledonia .... *ansevata*
    Head, pronotum, and scutellum more or less unicolorous with hemelytra 24
24. Dorsum yellowish with faint reddish stripes, most conspicuous on pronotum; length apex tylus-cuneal fracture 1.70; male genitalia as in figures 517–519; Eastern New Guinea .... *biniguni*
    Dorsum faded red-orange, thickly covered with woolly sericeous pubescence; length apex tylus-cuneal fracture 1.89; male genitalia as in figures 577–579; Hong Kong .... *hongkong*

Sejanus albosignatus (Knight)

Figures 502, 509–513

Idiatella albosignatus Knight, 1938a, p. 25.

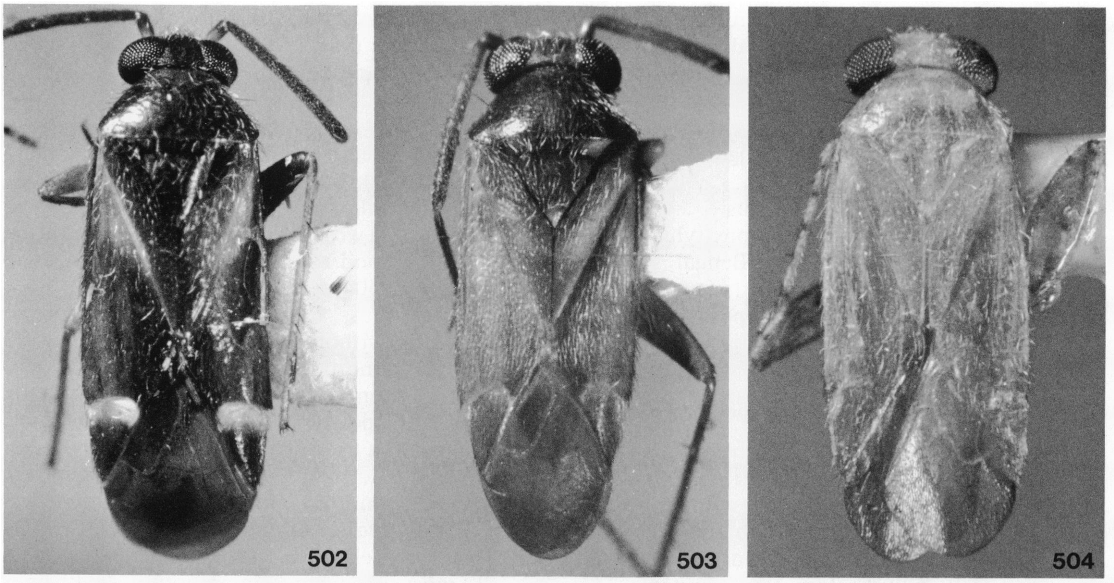
DIAGNOSIS: Recognized by the relatively long slender body, the reclining weakly shining dorsal vestiture of simple setae, the elongate white marking on the inner margin anteriorly on the endocorium, the large single ivory area basally on the cuneus (fig. 502), the primarily yellowish first antennal segment with segments two, three, and four brown, the yellow-white coloration of all legs, including coxae, and the form of the male genitalia.

MALE GENITALIA: Figures 511–513.

MEASUREMENTS: See Appendix.

DISTRIBUTION: New Zealand and Australia (Carvalho and Gross, 1982).

SPECIMENS EXAMINED: Twenty-four males and 36 females, widely distributed in New Zealand, mostly from DSIR (see also AMNH).



FIGS. 502–504. *Sejanus* spp. 502. *S. albosignatus*, ♂, New Zealand, WI, Palmerton North Ballantae. 503. *S. ansevata*, holotype. 504. *S. biniguni*, ♂, Papua New Guinea, Milne Bay Prov., Biniguni.

Sejanus ansevata, new species

Figures 500, 503, 505–507, 514–516

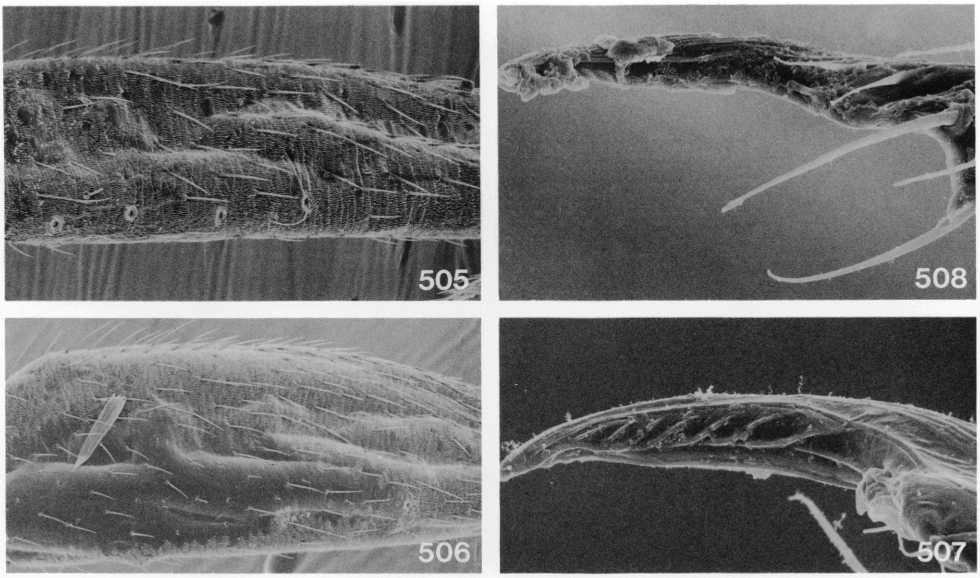
DIAGNOSIS: Recognized by its brown head, thorax, scutellum, and antennae, light yellow-brown hemelytra (fig. 503), yellow legs (including coxae), the dimensions, and the form of the male genitalia (figs. 514–516).

DESCRIPTION: Macropterous male. Elongate, parallel-sided, length apex tylus-cuneal fracture 1.94, width pronotum 0.88; head, pronotum, scutellum, thoracic venter, antennae, last abdominal sternite, and most of genital capsule brown; hemelytra light yellow-brown, cuneus and exocorium adjacent to cuneus more intensely yellowish; membrane smoky; all legs, including coxae yellow-white.

Body surface smooth, weakly shining, pronotum very weakly rugose; dorsum with subappressed, pale, simple setae; antennae with very short, neat, subappressed vestiture; meso- and meta-femoral trichobothria as in figures 505 and 506; all tibiae with very short subappressed setae, protibiae with a few suberect black spines shorter than tibial diameter, mesotibiae with scattered suberect black spines about as long as tibial diameter, metatibiae with scattered suberect black spines slightly longer than tibial diameter; pro- and meso-tibiae without rows of minute black spicules, metatibiae with several rows.

Vertex slightly declining anteriorly, posterior margin smoothly rounded, weakly concave, frons nearly flat in dorsal view, barely projecting beyond eyes; eyes occupying entire height of head in lateral view; antennal segment two cylindrical, about equal in diameter to segment one; genae of width about equal to diameter of antennal segment three; gula obsolete; labium reaching to apex of mesocoxae; pronotum nearly horizontal longitudinally, with lateral margin nearly straight; mesoscutum exposed to width about equal to diameter of antennal segment two, demarcated from scutellum by a rather deep, nearly straight, transverse impression; scutellum slightly elevated; hemelytra gently sloping laterally; cuneus shallowly inset at incisure; abdomen slender, narrowly attached to thorax; genital capsule occupying about one-third length of abdomen; large cell of membrane sharply rounded posteromesially; metafemora distinctly curving on dorsal surface; claw as in figure 507.

MALE GENITALIA: Figures 505–507. Vesica sigmoid, weakly twisted, secondary gonopore moderately developed, vesica without apical spine.



FIGS. 505–508. *Sejanus* spp. 505–507. *S. ansevata*. 505. Mesofemur, showing trichobothria. 506. Metafemur, showing trichobothria. 507. Detail of mesioventral surface of claw. 508. *S. biniguni*. Detail of ventral surface of claw.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 500. New Caledonia.

HOLOTYPE ♂: NEW CALEDONIA: Anse Vata, November 16, 1958, at light, C. R. Joyce collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but October 23–November 16, 1958 (AMNH, Bishop), 9♂♂.

Sejanus biniguni, new species

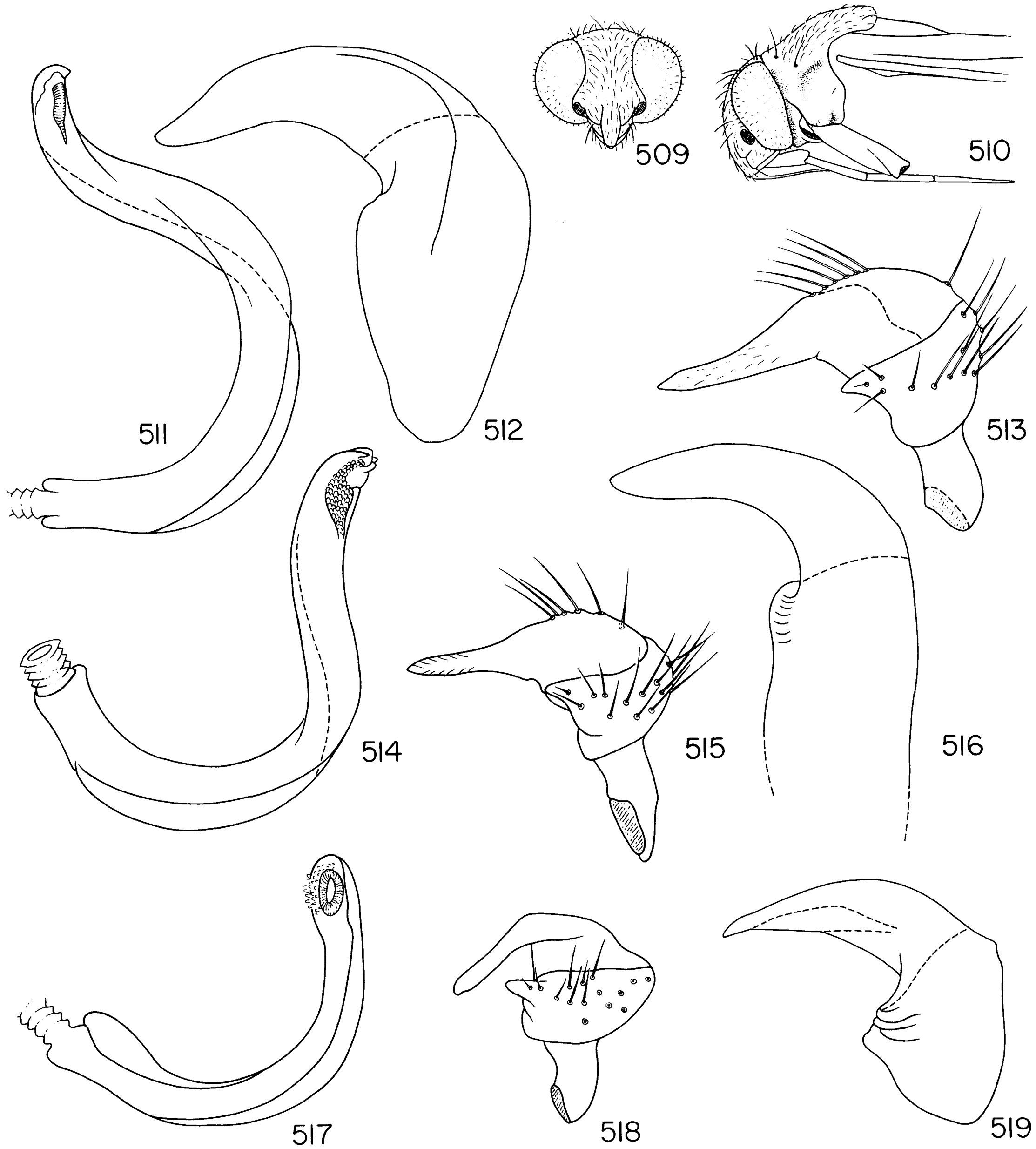
Figures 499, 504, 508, 517–519

DIAGNOSIS: Recognized by its small size, yellowish background coloration with faint red longitudinal stripes on the pronotum and scutellum (fig. 504), the reddish infusion on the femora, its dimensions, and the form of the male genitalia (figs. 517–519); general coloration most closely resembling that of *novocaledonicus*.

DESCRIPTION: Macropterous male. Elongate, nearly parallel-sided, length apex tylus-cuneal fracture 1.70, width pronotum 0.76; general coloration yellowish, eyes maroon, pronotum with four and scutellum with two rather faint, reddish longitudinal stripes; all femora with some, metafemora with numerous, small brown spots, distal one-half of metafemora heavily reddish; all tibial spines with brown bases.

Body surface very smooth, dull; dorsum with recumbent, pale, weakly shining setae; antennae with short, neat, recumbent vestiture and a few slightly longer suberect fine setae.

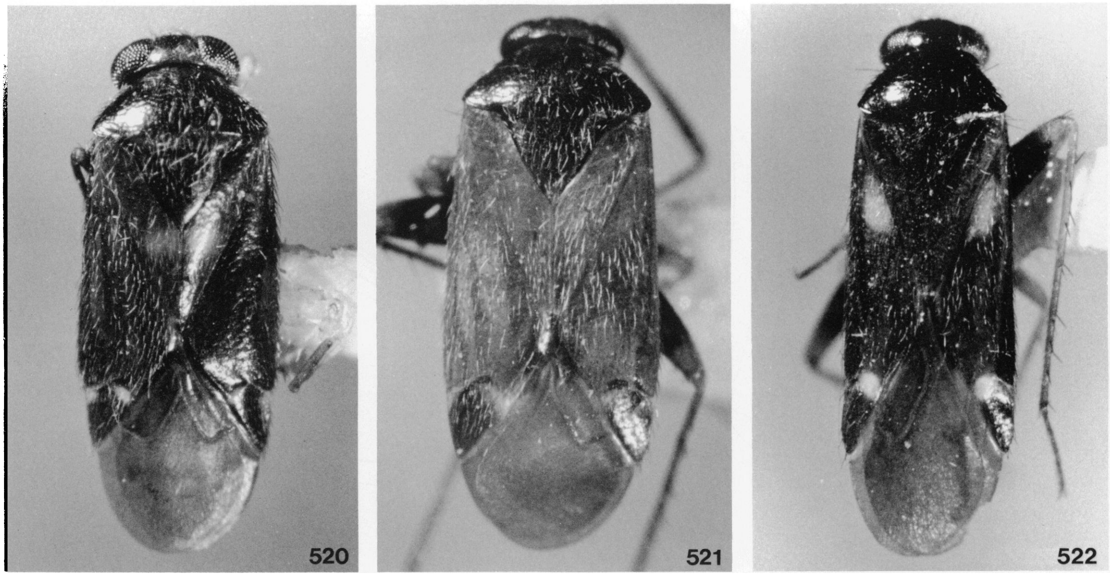
Vertex slightly declining anteriorly, posterior margin smoothly rounded, weakly concave, frons weakly convex in dorsal view, projecting slightly beyond anterior margin of eyes; eyes occupying nearly entire height of head in lateral view; antennal segment two cylindrical, of uniform and slightly smaller diameter than segment one; genae narrow, width about equal to diameter of antennal segment three; gula obsolete; labium reaching to apex of mesocoxae; pronotum nearly horizontal longitudinally, lateral margins distinctly and smoothly rounded; mesoscutum narrowly exposed, nearly flat, separated from scutellum by a fine straight impression, scutellum nearly flat; hemelytra slightly declining laterally; cuneus very slightly inset at incisure; abdomen more or less broadly attached



FIGS. 509–519. *Sejanus* spp. 509–513. *S. albosignatus*. 509. Frontal view of head, ♂. 510. Lateral view of head and prothorax, ♂. 511. Vesica. 512. Phallotheca. 513. Left paramere. 514–516. *S. ansevata*. 514. Vesica. 515. Left paramere. 516. Phallotheca. 517–519. *S. biniguni*. 517. Vesica. 518. Left paramere. 519. Phallotheca.

to thorax, somewhat broadened mesially; genital capsule occupying about one-fourth of length of abdomen; large cell of membrane distinctly and sharply angulate posteromesially; metafemora distinctly curving on dorsal surface.

MALE GENITALIA: Figures 517–519. Vesica C-shaped, flat, not twisted, secondary gono-



FIGS. 520–522. *Sejanus* spp. 520. *S. brassi*, ♂, Papua New Guinea, Eastern Highlands Prov., Okapa area. 521. *S. cinnameus*, holotype. 522. *S. elongatus*, holotype.

pore developed, partially surrounded by small knoblike projections, vesica without apical spine.

FEMALE: Macropterous. See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 499. Papua New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Milne Bay Prov.:* Biniguni, Gwariu River, 150 m., July 27–August 14, 1953, Camp No. 3, Fourth Archbold Expedition to New Guinea, Geoffrey M. Tate collector; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype (AMNH), 7♂♂, 1♀.

Sejanus brassi, new species

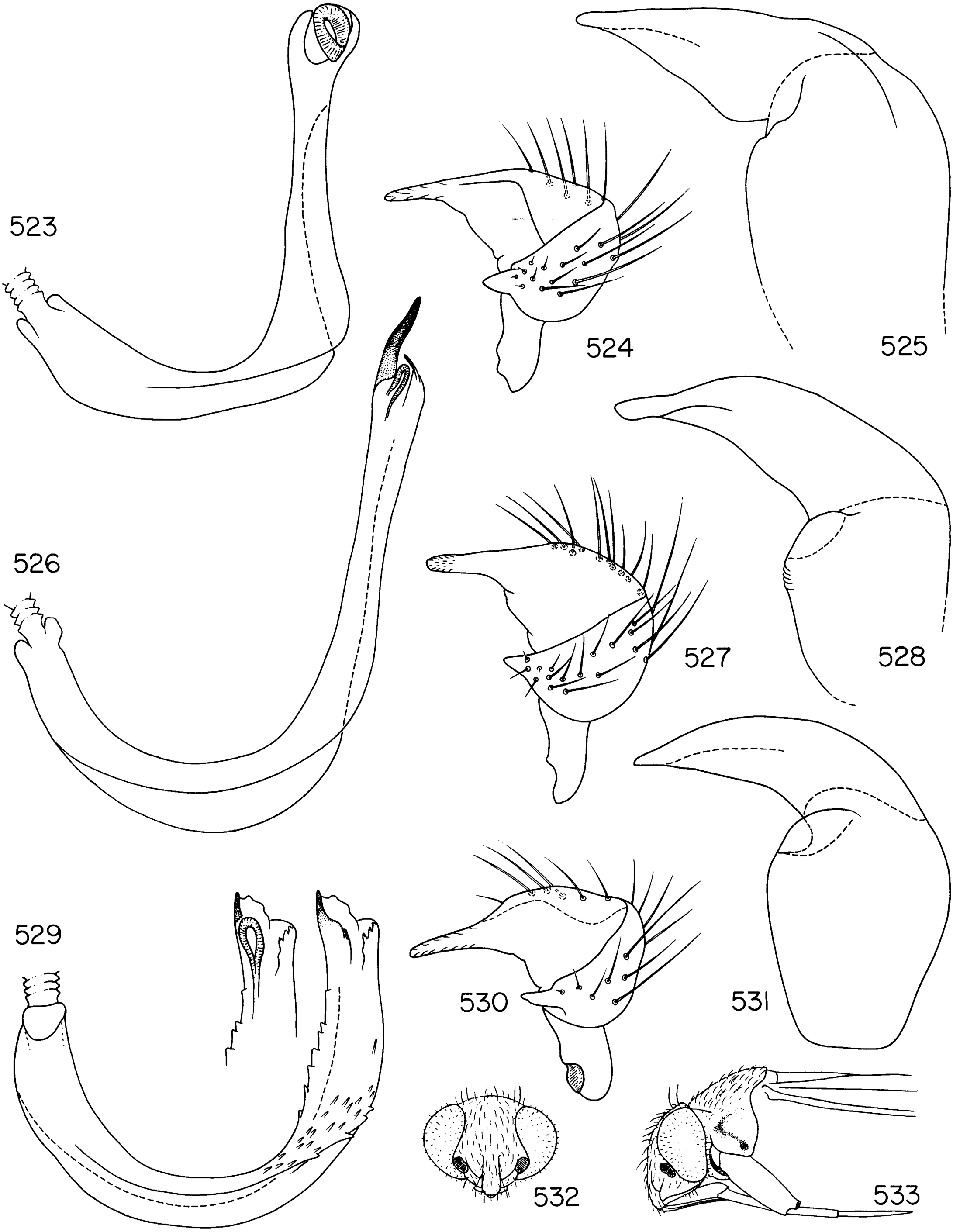
Figures 500, 520, 523–525

DIAGNOSIS: Recognized by the generally castaneous coloration, the distinctly separated ivory spots on the cuneus (fig. 520), the yellowish first antennal segment, proximal half of second antennal segment, distal portion of all femora, and all tibiae and tarsi, and the form of the male genitalia (figs. 523–525).

DESCRIPTION: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture 1.83, width pronotum 0.92; general coloration castaneous, cuneus with distinct but relatively small, distinctly separated ivory spots anteromesially and anterolaterally; dirty yellow as follows: antennal segment one; proximal one-half of antennal segment two, distal one-fifth of pro- and meso-femora and distal one-eighth of metafemora, and all tibiae and tarsi.

Body surface generally smooth, pronotum weakly rugulose; pronotum and scutellum weakly shining, hemelytra dull; dorsum clothed with recumbent, pale, moderately long, simple setae; antennae with short, neat, subappressed vestiture; all tibiae with short, pale, subappressed common setae and slender black spines as follows: protibiae with a few spines not longer than tibial diameter, meso- and meta-tibiae with more numerous spines of length about one and one-half times tibial diameter; pro- and meso-tibiae without rows of fine black spicules, metatibiae with several rows.

Vertex distinctly declining anteriorly, pos-



FIGS. 523–533. *Sejanus* spp. 523–525. *S. brassi*. 523. Vesica. 524. Left paramere. 525. Phallotheca. 526–528. *S. cinnameus*. 526. Vesica. 527. Left paramere. 528. Phallotheca. 529–533. *S. elongatus*. 529. Vesica and cutaway detail of apex of vesica. 530. Left paramere. 531. Phallotheca. 532. Frontal view of head, ♂. 533. Lateral view of head and prothorax, ♂.

terior margin sharply rounded, straight between eyes; frons flat in dorsal view, not projecting beyond eyes; eyes occupying entire height of head in lateral view; antennal segment two increasing slightly in diameter from base and tapered on extreme distal portion, greatest diameter about equal to that of segment one; genae and gula obsolete; labium reaching to apex of metacoxae; pronotum distinctly declining anteriorly, lateral margins smoothly rounded; mesoscutum exposed to width slightly greater than diameter of antennal segment two, slightly elevated, separated from scutellum by a nearly straight, very distinct impression; scutellum weakly transversely rounded; clavus conspicuously declining laterally; cuneus rather deeply inset at incisure; large cell of membrane sharply rounded posteromesially; abdomen not broadly attached to thorax, appearing relatively narrow and nearly straight-sided; genital capsule occupying about one-third length of abdomen; metafemur curving on dorsal surface.

MALE GENITALIA: Figures 523–525. Vesica more or less J-shaped, twisted, secondary gonopore apical, developed, vesica without apical spine.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for L. J. Brass.

DISTRIBUTION: Figure 500. Papua New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Purosa Camp, Okapa area, 15 mi. SSE of Okapa Patrol Post, 1950 m., September 26–30, 1959, L. J. Brass collector; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype (AMNH), 4♂♂. PAPUA NEW GUINEA: *Milne Bay Prov.:* Maneau Range, north slope of Mt. Dayman, 1550 m., June 30–July 13, 1953 (Tate; AMNH), 1♂.

Sejanus chinai Knight

Idiatella chinai Knight, 1938a, p. 27.

DISCUSSION: Knight (1938a) described this species on the basis of a male and a female taken at Kodai Kanal, South India. The type is presumably deposited in the British Museum (Nat. Hist.); I have not examined it.

Sejanus cinnameus, new species

Figures 499, 521, 526–528

DIAGNOSIS: Recognized by the generally cinnamon-like coloration, the faint ivory markings on the cuneus (fig. 521), and the form of the male genitalia, the vesica with a distinct finger-like apical spine (figs. 526–528), and the dimensions.

DESCRIPTION: Macropterous male. Elongate, nearly parallel-sided, length apex tylus-cuneal fracture 1.96, width pronotum 0.98; general coloration cinnamon, hemelytra much lighter than body; cuneus with rather small, weak, ivory spots anteromesially and anterolaterally; appendages dirty yellow as in *brassi.*

Body surface smooth, pronotum weakly transversely rugulose, weakly shining, hemelytra dull; dorsum with recumbent, moderately long, pale common setae; antennae with short, neat, recumbent vestiture; all tibiae with recumbent, short, dark, common setae, protibiae with a very few suberect black spines slightly longer than tibial diameter, meso- and meta-tibiae with greater numbers of black, suberect spines about two times length of tibial diameter; pro- and meso-tibiae without rows of minute black spicules, metatibiae with several rows.

Vertex distinctly declining anteriorly, posterior margin sharply rounded, nearly straight between eyes; frons weakly convex and slightly protruding anterior to eyes in dorsal view; eyes occupying entire height of head in lateral view, head distinctly projecting anterior to eyes in this view; antennal segment two cylindrical, diameter about equal to that of segment one; genae and gula obsolete; labium reaching to apex of mesocoxae; pronotum distinctly declining anteriorly, lateral margins weakly rounded; mesoscutum exposed to width about equal to diameter of antennal segment two, slightly elevated, separated from scutellum by a weakly sinuous, very distinct impression; scutellum longitudinally horizontal, weakly rounded transversely; hemelytra declining laterally; cuneal incisure shallow; large cell of membrane rather broadly rounded posteromesially; abdomen not broadly attached to thorax, more or less parallel-sided, genital capsule occupying about two-fifths of length of abdomen; metafemur moderately curving on dorsal surface.

MALE GENITALIA: Figures 526–528. Vesica J-shaped, at most weakly twisted, secondary gonopore in the form of a thin more or less horseshoe-shaped sclerite, apex of vesica with one short, slender sclerotized projection and a much longer finger-like spine.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Latin, *cinnameus,* referring to cinnamon, indicating the general coloration of the body.

DISTRIBUTION: Figure 499. Papua New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Western Highlands Prov.:* 6.4 km. W of Wabag, 2020 m., June 13, 1963, J. Sedlacek collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 7♂♂. PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Kotuni, south slopes of Mt. Otto, August 4–20, 1959 (Brass; AMNH), 1♂. *Southern Highlands Prov.:* Betege, 20 km. NW of Koroba, 1600 m., September 21, 1963, light trap (Straatman; Bishop), 1♂.

Sejanus ecnomioides, new species

Figures 498, 534, 549

DIAGNOSIS: Most similar in structure and coloration to *ecnomiscos*; somewhat smaller than *ecnomios,* with ivory spots on cuneus relatively larger and more intense (fig. 534); structure of male genitalia indicating close relationship to *ecnomios* and *ecnomiscos*; structure of phallotheca and left paramere very close to *ecnomiscos* (figs. 543–549).

DESCRIPTION: Macropterous male. Medium-sized, relative to other members of the group, elongate, nearly parallel-sided, length apex tylus-cuneal fracture 1.92, width pronotum 0.93; general coloration castaneous to nearly black, cuneus with two large nearly confluent ivory spots anteriorly; all trochanters, extreme distal portion of all femora, and distal one-half of mesotibiae dirty yellow-brown; antennal segment one somewhat pale; membrane moderately dark.

Body surface generally smooth, pronotum weakly transversely rugulose, weakly shining, hemelytra dull; dorsum covered with recumbent, neat, rather short, brown, simple setae; antennal vestiture very short, neat, subappressed, with a few, short, erect fine setae; all tibiae with reclining, pale, simple setae; protibiae with very few, meso- and meta-tibiae with relatively numerous, slender, suberect, black spines slightly longer than tibial diameter; pro- and meso-tibiae without rows of black spicules, metatibiae with several.

Structure very similar to *ecnomios,* except as follows: antennal segment two cylindrical, not increasing in diameter distally, maximum diameter about equal to that of segment one; labium reaching to apex of metacoxae.

MALE GENITALIA: Figure 549. Vesica weakly sigmoid, strongly curved basally, weakly twisted, secondary gonopore not developed, apical spine long, relatively slender, at right angles to body of vesica; phallotheca and left paramere very similar to *ecnomiscos.*

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Greek, *ecnomios,* unusual, referring to the left paramere of the male genitalia.

DISTRIBUTION: Figure 498. Malaya.

HOLOTYPE ♂: MALAYSIA: *Malaya:* Cameron Highlands, Mt. Brichang, January 2–7, 1959, L. W. Quate collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 2♂♂.

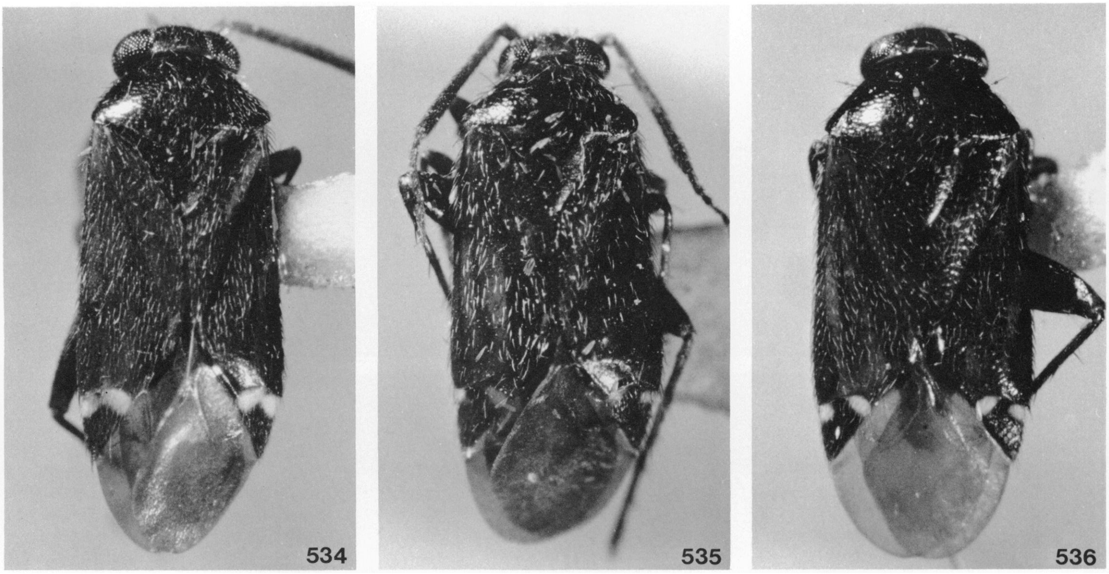
Sejanus ecnomios, new species

Figures 499, 535, 537–540, 541–545

DIAGNOSIS: Recognized by its relatively large size, nearly black coloration, distinct and separate ivory spots on the cuneus (fig. 535), and the distinctive form of the male genitalia (figs. 543–545), particularly the left paramere; most closely related on genital characters to *economioides* and *ecnomiscos.*

DESCRIPTION: Macropterous male. Relatively large, elongate, nearly parallel-sided, length apex tylus-cuneal fracture 2.15, width pronotum 1.08; general coloration nearly black; cuneus with weakly reddish ivory spots anterolaterally and anteromesially; antennal segment two pale proximal one-half, mesotibiae pale on distal one-half, extreme distal portion of all femora lighter than remainder of femora; membrane very dark.

Body surface generally smooth; pronotum



Figs. 534–536. *Sejanus* spp. 534. *S. ecnomioides,* holotype. 535. *S. ecnomios,* holotype. 536. *S. ecnomiscos,* holotype.

weakly transversely rugulose, weakly shining; hemelytra dull; dorsum covered with recumbent, pale, weakly shining, weakly woolly, simple setae; antennae with short, neat, reclining vestiture; all tibiae with reclining, brown, simple setae; meso- and meta-femoral trichobothria as in figures 539 and 540; protibiae with very few, meso- and meta-tibiae with relatively numerous slender, suberect, black spines of length about two times tibial diameter; pro- and meso-tibiae without rows of black spicules, metatibiae with several rows.

Vertex only slightly declining anteriorly, posterior margin nearly straight between eyes; broadly rounded; frons nearly straight across in dorsal view, equal with anterior margin of eyes; height of eyes slightly greater than total height of head (fig. 542); antennal segment two increasing slightly in diameter distally, greatest diameter about equal to that of segment one; genae and gula obsolete; labium reaching to apex of mesocoxae; pronotum gradually declining anteriorly, lateral margins nearly straight; mesoscutum exposed to width about equal to diameter of antennal segment three, narrowly separated from scutellum by a distinct nearly straight impression, slightly elevated; scutellum horizontal longitudinally, slightly rounded transversely; hemelytra distinctly declining laterally; cuneal incisure relatively deep; large cell of membrane sharply rounded posteromesially; metathoracic scent-gland evaporatory areas as in figure 537; abdomen moderately broadly attached to thorax, narrow, nearly parallel-sided, genital capsule occupying slightly more than one-third of length of abdomen (fig. 538); dorsal surface of metafemur smoothly, but not strongly curving.

Male Genitalia: Figures 543–545. Vesica J-shaped, somewhat twisted, secondary gonopore developed, apical, apex of vesica also with a finger-like spine at level of secondary gonopore; phallotheca L-shaped, basal portion elongate, parallel-sided, apex relatively short, attenuated; left paramere splayed out, frontal portion greatly expanded and elevated, similar in form to that found in *ecnomioides* and *ecnomiscos.*

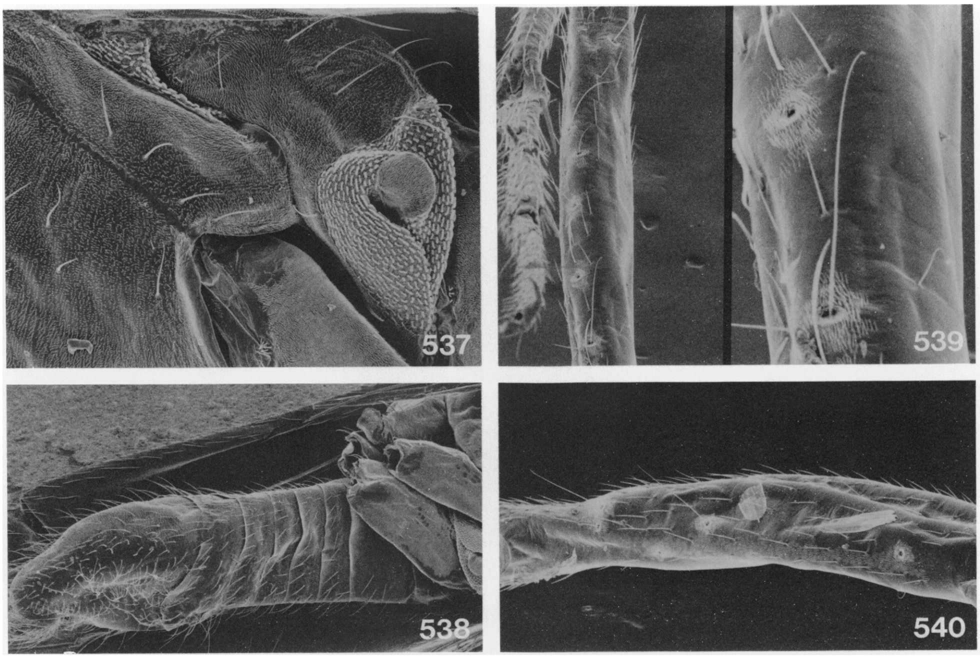
Female: Unknown.

Measurements: See Appendix.

Etymology: From the Greek, *ecnomios,* unusual, referring to the left paramere of the male.

Distribution: Figure 499. Papua New Guinea.

Holotype ♂: PAPUA NEW GUINEA:



FIGS. 537–540. *Sejanus ecnomios.* 537. Lateral view of metathorax. 538. Lateroventral view of abdomen. 539. Mesofemur showing trichobothria, and detail. 540. Metafemur, showing trichobothria.

Morobe Prov.: Mt. Kaindi, 2400 m., January 27, 1963, MV light, J. Sedlacek collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but also May 31, 1962, June 8–9, 1962, and September 18, 1972 (Scudder, Sedlacek; AMNH, Bishop), 8♂♂, 3♀♀.

Sejanus ecnomiscos, new species

Figures 498, 536, 546–548

DIAGNOSIS: Most similar in structure and coloration to *ecnomioides*; somewhat smaller than *ecnomios*; structure of male genitalia indicating close relationship with *ecnomios* and *ecnomioides*; structure of phallotheca and left paramere very similar to *ecnomioides.*

DESCRIPTION: Macropterous male. Medium-sized relative to other members of group, elongate, nearly parallel-sided, length apex tylus-cuneal fracture 1.83, width pronotum 0.92; general coloration castaneous, cuneus with a relatively small intense ivory spot anteromesially and anterolaterally, these being widely separated; antennal segment one intensely castaneous; distal half of mesotibiae dirty yellow, all tarsi appearing pale; membrane almost white.

Body surface, vestiture, and spination generally as in *ecnomioides*; antennal vestiture short, reclining.

Structure very similar to *ecnomios* except as follows: labium slightly surpassing apex of metacoxae.

MALE GENITALIA: Figures 546–548. Vesica J-shaped, weakly twisted, secondary gonopore complete, but not strongly developed, apical spine very long and slender, appearing as an extension of body of vesica; phallotheca L-shaped, rather broad basally, strongly attenuated distally; left paramere with frontal portion strongly flattened and elevated.

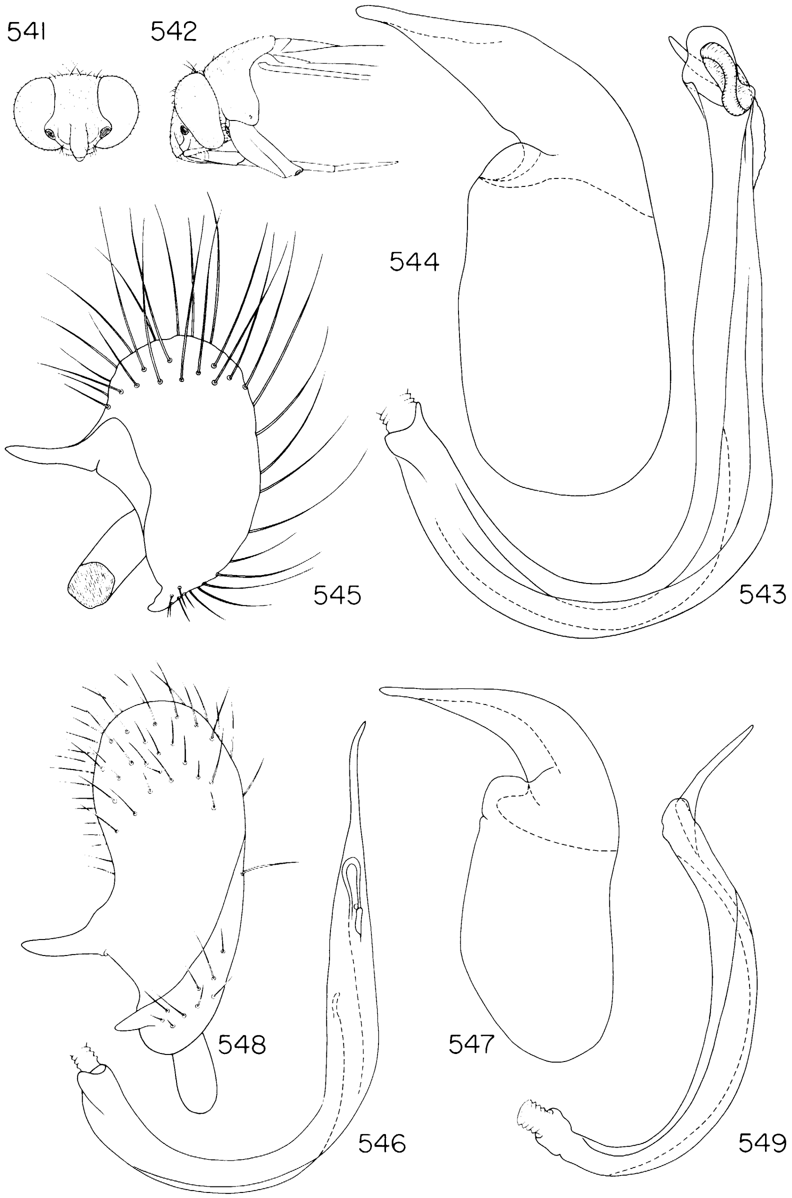
FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Greek, *ecnomios,* unusual, referring to the left paramere of the male genitalia.

DISTRIBUTION: Figure 498. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Mindanao:* Misamis Oriental, Mt. Pomalihi, 21 km. W of Gingoog City, 800–1000 m., October 9, 1965, light trap, H. M. Torrevillas



FIGS. 541–549. *Sejanus* spp. 541–545. *S. ecnomios*. 541. Frontal view of head, ♂. 542. Lateral view of head and prothorax, ♂. 543. Vesica. 544. Phallotheca. 545. Left paramere. 546–548. *S. ecnomiscos*. 546. Vesica. 547. Phallotheca. 548. Left paramere. 549. *S. ecnomioides*, vesica.

collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 6♂♂. PHILIPPINE ISLANDS: *Luzon:* Camarines Sur: Mt. Isarog, Pili, 800 m., April 28, 1965 (Torrevillas; Bishop, AMNH), 4♂♂.

Sejanus elongatus, new species

Figures 499, 522, 529–533

DIAGNOSIS: Recognized, along with *macer,* by the very slender, elongate body form, the single ivory marking anteromesially on the corium strongly contrasting with the polished shining, castaneous dorsum (fig. 522), the white proximal portion of antennal segment three, and the form of the vesica (fig. 529). Distinguished from *macer* by the yellowish rather than castaneous first antennal segment, trochanters, and metatibiae and by differences in the male vesica.

DESCRIPTION: Macropterous male. Moderate-sized for genus, very slender and elongate, parallel-sided, length apex tylus-cuneal fracture 2.02, width pronotum 0.87; general coloration casteneous, endocorium often with a semicircular white patch adjacent to clavus at level of apex of scutellum, cuneus with a more or less circular ivory marking anteromesially; proximal half of antennal segment three white; dirty yellow as follows: antennal segment one, all trochanters, distal one-half of pro- and meso-femora, distal one-fourth of metafemora, and all tibiae and tarsi; membrane dark smoky.

Body surface generally smooth, head, pronotum, and scutellum rather strongly shining, hemelytra dull; dorsum with recumbent, brown, common setae; antennae with short, reclining vestiture; all tibiae with recumbent brown common setae; protibiae with a few, meso- and meta-tibiae with greater numbers of suberect black spines about one and one-half times as long as tibial diameter; pro- and meso-tibiae with rows of black spicules, metatibiae with several rows.

Vertex rounded transversely and anteroposteriorly, posterior margin weakly concave between eyes, rather sharply rounded, anterior margin of head, including eyes, smoothly rounded in dorsal view; eyes occupying most of height of head in lateral view, face distinctly projecting beyond eyes in lateral view; antennal segment two increasing slightly in diameter distally, greatest diameter about equal to that of segment one; width of genae about equal to diameter of antennal segment three; gula obsolete; labium reaching to apex of mesocoxae; pronotum only weakly declining anteriorly, lateral margins nearly straight, not strongly converging; mesoscutum exposed to width about equal to tibial diameter, very slightly elevated, separated from scutellum by a distinct, slightly angulate impression; scutellum weakly transversely rounded; hemelytra distinctly declining laterally; cuneal incisure obsolete; large cell of membrane rounded and bulging posteromesially; abdomen appearing narrowly attached to thorax, narrow, parallel-sided, genital capsule occupying about one-fourth of abdominal length; metafemora elongate, slender, dorsal surface curving.

MALE GENITALIA: Figures 529–531. Vesica more or less C-shaped, weakly twisted, body subapical with numerous sawlike teeth, secondary gonopore moderately developed, no apical spine.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its elongate, slender appearance.

DISTRIBUTION: Figure 499. New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Wisselmeren, Itouda, Kamo Valley, 1500 m., August 12, 1955, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

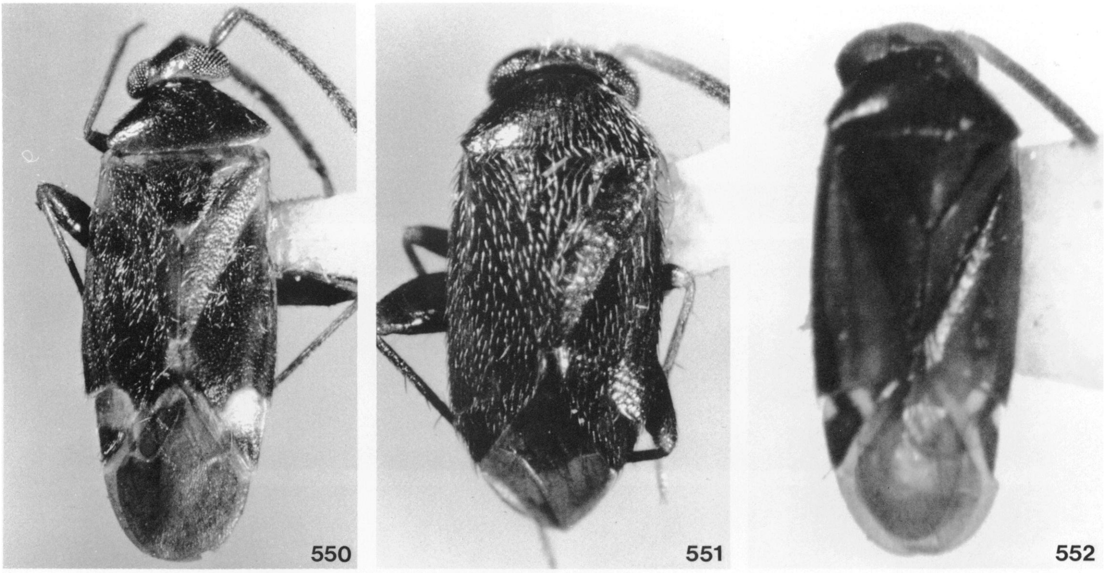
PARATYPES: INDONESIA: *West Irian:* Bokondini, 40 km. N of Baliem Valley, *ca.* 1300 m., November 16–23, 1961 (Quate; Bishop), 1♂; Star Mountains, Sibil Valley, 1245 m., October 18–November 9, 1961 (Quate and Quate; AMNH, Bishop), 5♂♂; Wisselmeren, Kamo-Debei Divide, 1700 m., August 13, 1955 (Gressitt; Bishop), 1♂; Wisselmeren, Tage Lake, 1760 m., August 4, 1955 (Gressitt; Bishop), 1♂; Swart Valley, Karubaka, 1400–1600 m., November 9–16, 1958, light trap (Gressitt; AMNH, Bishop), 2♂♂.

Sejanus fijiensis, new species

Figures 501, 550, 553–555, 561–563

DIAGNOSIS: Recognized by the distinctly ovoid body form, the light-colored, yellow-white to translucent, anterior two-thirds of the cuneus, the generally rich brown coloration (fig. 550), the broad abdomen, the dimensions, and the form of the male genitalia (figs. 561–563).

DESCRIPTION: Macropterous male. Moderate-sized for the group, distinctly ovoid in outline, length apex tylus-cuneal fracture 1.88, width pronotum 0.97; general coloration rich brown, with some reddish infusion, especially posteriorly on corium and cuneus; apex of scutellum and corium very narrow just posterior to claval apex yellowish; anterior two-thirds of cuneus yellow-white to trans-



FIGS. 550–552. *Sejanus* spp. 550. *S. fijiensis,* holotype. 551. *Sejanus funerellus,* holotype. 522. *Sejanus funereus,* holotype.

lucent (fig. 550); dirty yellow as follows: proximal half of antennal segment three and all coxae and trochanters; pro- and meso-femora on extreme distal portion and all tibiae and tarsi light brown; membrane dull smoky, veins on posterior margin of cells yellowish.

Body surface smooth, weakly shining; dorsum very weakly punctate; pronotum covered with reclining, brown, simple setae; scutellum and hemelytra covered with recumbent, weakly woolly, sericeous vestiture; antennae with short, reclining vestiture; meso- and meta-femoral trichobothria as in figures 553 and 554; pro- and meso-tibiae with a single row of black spicules on dorsal surface, metatibiae with several rows of black spicules; all tibiae with reclining pale simple setae and some inclined short pale spines.

Vertex nearly flat, posterior margin weakly concave between eyes, sharply carinate; frons weakly rounded and protruding beyond eyes in dorsal view; eyes occupying about three-fourths of height of head in lateral view, and face distinctly projecting anterior to eyes; antennal segment two cylindrical; genae about as wide as tibial diameter; gula obsolete; labium reaching to apex of metacoxae; pronotum distinctly flattened, only weakly declining anteriorly, lateral margins nearly straight, strongly converging anteriorly; mesoscutum and scutellum nearly flat, mesoscutum exposed to about width of diameter of tibiae, separated from scutellum by a distinct, somewhat irregular sinuous impression; hemelytra only weakly declining laterally; cuneal incisure obsolete; large cell of membrane sharply angulate posteromesially; abdomen very broadly attached to thorax, flaring posterior to base, tapering strongly to genital capsule, genital capsule occupying slightly more than one-third of length of abdomen; metafemur elongate, slender, weakly curving, nearly parallel-sided; claws as in figure 555.

MALE GENITALIA: Figures 561–563. Vesica J-shaped, at most slightly twisted, secondary gonopore apparently large, but very weakly sclerotized, apex of vesica with a complicated spinelike projection; phallotheca L-shaped, inflated basally, relatively broad and not attenuated distally; left paramere somewhat splayed out, anterior process short, posterior process relatively long, moderately attenuated.

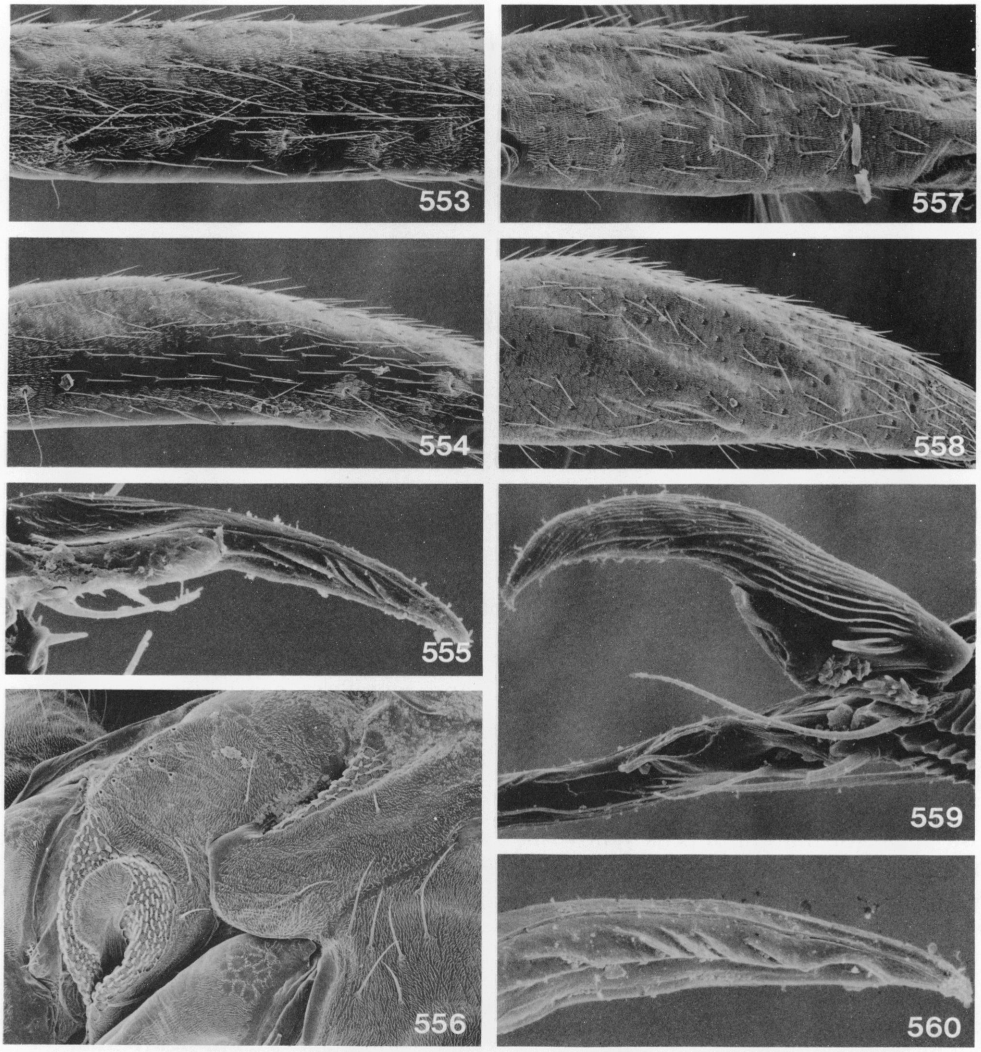
FEMALE: Macropterous, See generic discussion.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on Fiji.

DISTRIBUTION: Figure 501. Fiji.

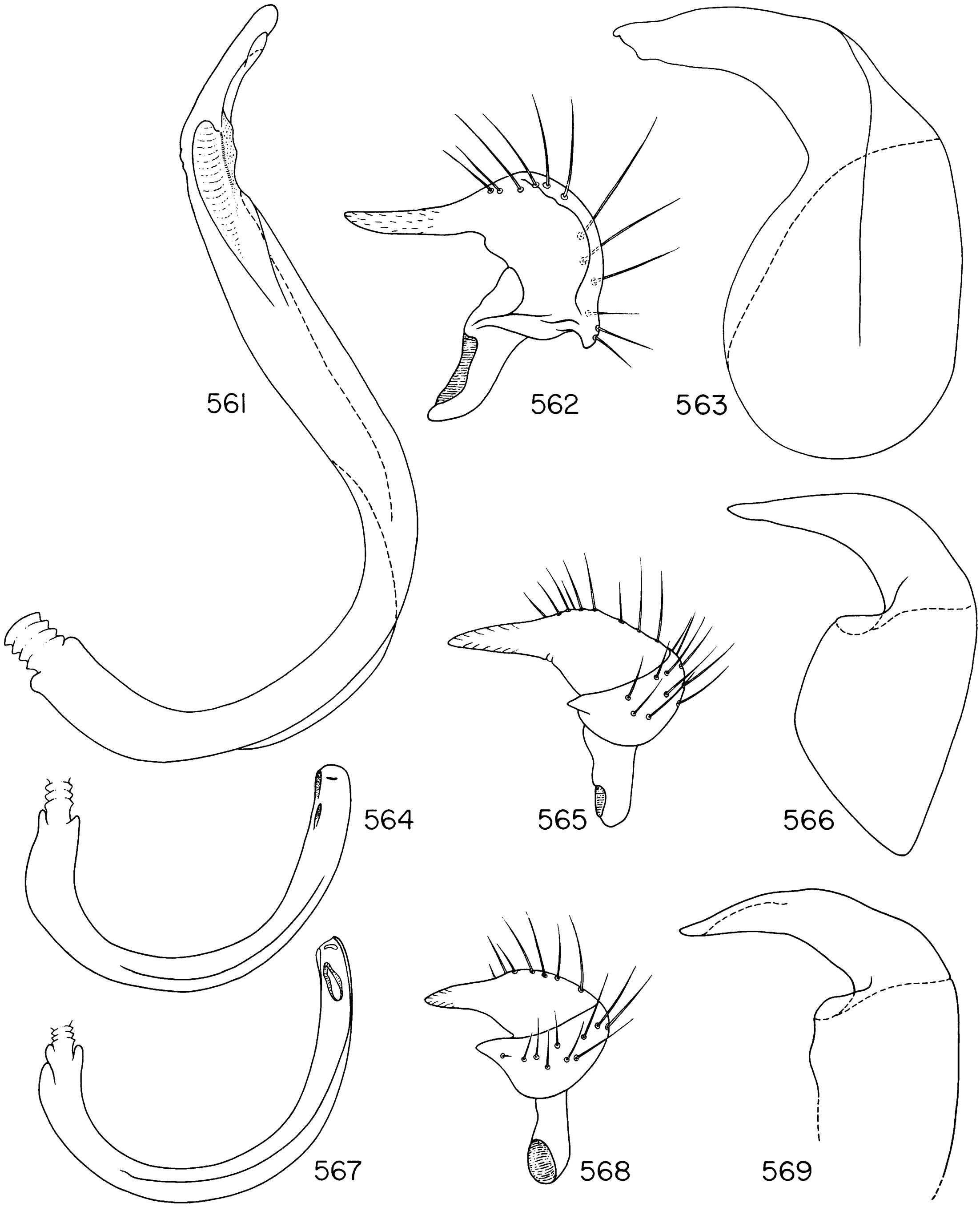


FIGS. 553–560. *Sejanus* spp. 553–555. *S. fijiensis.* 553. Mesofemur, showing trichobothria. 554. Metafemur, showing trichobothria. 555. Mesioventral view of claw. 556–560. *S. hongkong.* 556. Lateral view of metathoracic showing scent-gland evaporatory area. 557. Mesofemur, showing trichobothria. 558. Metafemur, showing trichobothria. 559. Pretarsus. 560. Detail of mesioventral view of claw.

HOLOTYPE ♂: FIJI: *Viti Levu:* Nandarivatu, 3000 feet, September 3, 1938, beating shrubbery, E. C. Zimmerman collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 2♂♂, 2♀♀. FIJI: *Moala Island:* Vunuka, sea level, August 23, 1938, beating shrubs (Zimmerman; Bishop), 1♀. *Ovalau Island:* Andubangda, 1800–2000 feet, July 15, 1938, beating (Zimmerman; Bishop), 1♀. *Vanu Mbalavu Island:* Baratu, August 16, 1938, beating shrubs (Zimmerman; Bishop) 1♀. *Viti Levu Island:* Nandarivatu Ridge W of Vatuthere, 2600–3000 feet, September 8, 1938, beating (Zimmerman; Bishop), 1♀.

DISCUSSION: Two male specimens from Fiji (Bishop) are very similar in aspect, coloration, and vestiture, but are much smaller than *fijiensis.* Five additional specimens from



FIGS. 561–569. *Sejanus* spp. 561–563. *S. fijiensis*. 561. Vesica. 562. Left paramere. 563. Phallotheca. 564–566. *Sejanus funereus*. 564. Vesica. 565. Left paramere. 566. Phallotheca. 567–569. *S. funerellus*. 567. Vesica. 568. Left paramere. 569. Phallotheca.

New Guinea (3♂♂, 2♀♀; Bishop, BMNH) are similar in appearance to the two just mentioned specimens from Fiji. The male genitalia are so delicate that I have not been able to associate this material positively with *S. fijiensis*.

Sejanus funerellus, new species

Figures 498, 551, 567–569

DIAGNOSIS: Recognized by its relatively small size and ovoid shape, as also found in *funereus* and *neofunereus,* length apex tylus-cuneal fracture 1.51, width pronotum 0.82, the generally castaneous coloration with no ivory markings on the cuneus, the yellowish first antennal segment, proximal half of antennal segment two, and pro- and meso-tibiae, and the form of the male genitalia with a simple C-shaped vesica (fig. 567), very similar to that of *funereus* and *funerioides.*

DESCRIPTION: Macropterous male. Relatively small, ovoid, length apex tylus-cuneal fracture 1.51, width pronotum 0.82; general coloration castaneous, including membrane, cuneus without ivory markings; antennal segment one, proximal half of antennal segment two, extreme distal portion of all femora, and pro- and meso-tibiae and tarsi yellowish.

Body surface smooth, weakly shining, dorsum covered with neat, recumbent, brown, weakly shining, common setae; antennae with very short, neat, recumbent vestiture; all tibiae with reclining common setae, protibiae with a few short dark spines, meso- and metatibiae with more numerous spines somewhat longer than tibial diameter; pro- and mesotibiae without rows of tiny black spicules, metatibiae with several rows.

Vertex rather strongly declining anteriorly, posterior margin smoothly but sharply rounded, nearly straight across between eyes; frons nearly straight across in dorsal view; height of eyes slightly greater than height of head in lateral view, head projecting only slightly beyond anterior margin of eyes; antennal segment two cylindrical, stout, diameter slightly greater than that of antennal segment one; genae and gula obsolete; labium reaching almost to apex of metacoxae; pronotum distinctly declining anteriorly, lateral margins smoothly rounded, more or less strongly converging anteriorly; mesoscutum exposed to width about equal to diameter of antennal segment two, slightly elevated, separated from scutellum by a rather deeply impressed, irregular line, scutellum very weakly transversely rounded; hemelytra strongly declining laterally, appearing distinctly convex in cross section, cuneal incisure shallow; large cell of membrane distinctly angulate posteromesially; abdomen broadly attached to thorax, tapering posteriorly, tiny genital capsule occupying about one-third of length of abdomen; metafemur appearing enlarged, rather strongly curving on dorsal margin.

MALE GENITALIA: Figures 567–569. Vesica C-shaped, untwisted, secondary gonopore ~~very~~ weakly developed, no apical spine.

FEMALE: See generic discussion.

ETYMOLOGY: Named for its similarity of appearance to *funereus* Distant.

DISTRIBUTION: Figure 498. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Negros Island:* Camp Lookout, Dumaguete, May 20, 1961, T. C. Schneirla and A. Reyes collectors; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype, but February 15–May 25, 1961, 1300–1600 feet (AMNH, Bishop), 18♂♂.

Sejanus funereus Distant

Figures 552, 564–566

Sejenus funereus Distant, 1910a, p. 21.

DIAGNOSIS: Recognized by its relatively small size and ovoid shape (length apex tylus-cuneal fracture 1.63, width pronotum 0.85), the generally castaneous coloration with well-separated distinct ivory spots anteromesially and anterolaterally on the cuneus, the yellow first antennal segment, proximal one-third to one-half of antennal segment two, third and fourth antennal segments, extreme distal portions of all femora, and all tibiae and tarsi, and the structure of the male genitalia. General structure very similar to that of *funerellus*; genital structure especially close to that of *funerellus, funerioides,* and *neofunereus.*

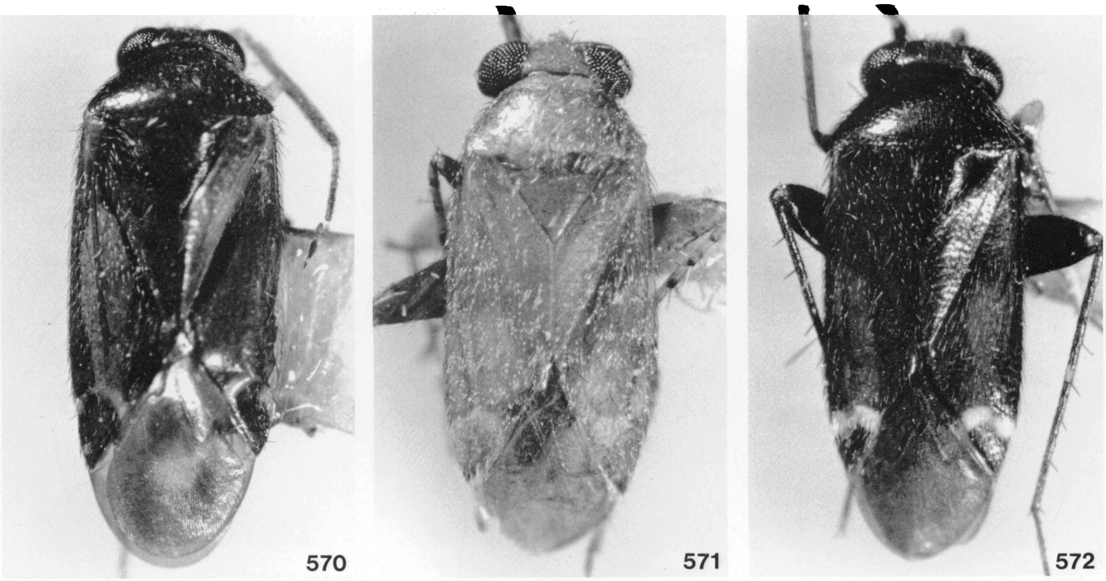
MALE GENITALIA: Figures 565–566.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

DISTRIBUTION: South India, Sri Lanka.

SPECIMENS EXAMINED: SOUTH INDIA: Anamalai Hills, Cinchona, 3500 feet, April 1956 (Nathan; AMNH), 1♂; no data (Campbell; BMNH), 2♂♂. SRI LANKA: *Sabaragamuwa Prov.:* Deerwood, Kuruwita, 6 mi. NNW of Ratnapura, February 17–22, 1962, at light (Brinck, Andersen, Cederholm; Lund), 2♂♂. *Western Prov.:* Colombo, Colpetty, Jan-



FIGS. 570–572. *Sejanus* spp. 570. *S. funerioides,* ♂, Papua New Guinea, Western Highlands Prov., Wabag. 571. *S. hongkong,* ♂, Hong Kong, Taipokau. 572. *S. isarog,* ♂, Philippine Islands, Luzon, Mt. Mayon.

uary 5–13, 1962, garden (Brinck, Andersen, Cederholm; Lund), 1♂.

Sejanus funerioides, new species

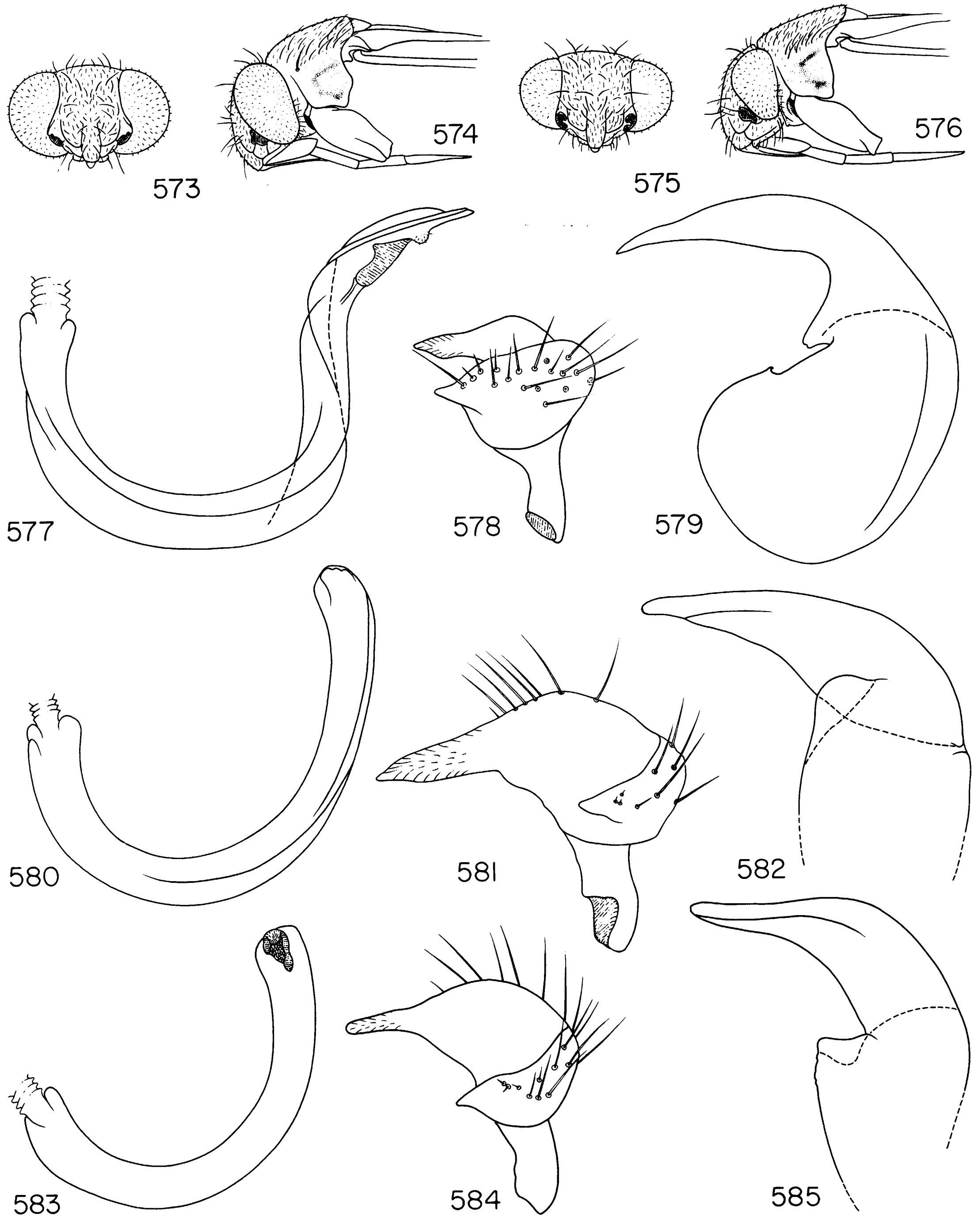
Figures 499, 570, 580–582

DIAGNOSIS: Recognized by the moderately large size for the group, the more or less parallel-sided body form, the generally castaneous but not blackish coloration, the nearly confluent reddish ivory spots anteriorly on the cuneus (fig. 570), the dirty yellow first antennal segment, tibiae, tarsi, and femora distally, and the form of the male genitalia (figs. 580–582), the vesica being very similar in structure to *funereus* and *funerellus.*

DESCRIPTION: Macropterous male. Moderately large, parallel-sided, length apex tylus-cuneal fracture 2.04, width pronotum 1.02; general coloration castaneous but not blackish; cuneus with reddish-tinged nearly confluent ivory markings anteromesially and anterolaterally; membrane smoky, veins yellowish; appendages dirty yellow as follows: antennal segments one, three, and four, distal one-half of profemora, extreme distal portion of meso- and meta-femora, and all tibiae and tarsi.

Body surface smooth, moderately polished and shining; dorsum covered with recumbent, pale, weakly shining, unkempt simple setae; antennal vestiture of short reclining or subappressed setae and some longer more nearly erect fine setae; all tibiae with reclining or subappressed short simple setae; protibiae with a few suberect, black, fine spines about as long as tibial diameter; pro- and mesotibiae without rows of tiny black spicules, metatibiae with several rows.

Vertex moderately declining anteriorly, posterior margin nearly straight across between eyes, smoothly but sharply rounded; frons nearly straight across in dorsal view, not projecting beyond eyes; height of eyes very slightly greater than height of head; antennal segment two increasing slightly in diameter distally, greatest diameter about equal to that of segment one; genae and gula obsolete; labium reaching to apex of metacoxae; pronotum gently declining anteriorly, lateral margins weakly rounded, converging anteriorly, but not strongly so; mesoscutum exposed to width somewhat greater than diameter of antennal segment two, slightly elevated, separated from scutellum by a distinct, nearly straight, transverse impression,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FIGS. 573–585. *Sejanus* spp. 573–579. *S. hongkong*. 573. Frontal view of head, ♂. 574. Lateral view of head and prothorax, ♂. 575. Frontal view of head, ♀. 576. Lateral view of head and prothorax, ♀. 577. Vesica. 578. Left paramere. 579. Phallotheca. 580–582. *S. funerioides*. 580. Vesica. 581. Left paramere. 582. Phallotheca. 583–585. *S. isarog*. 583. Vesica. 584. Left paramere. 585. Phallotheca.

scutellum nearly flat; hemelytra declining laterally; cuneal incisure deep; large cell of membrane sharply rounded posteromesially; abdomen more or less broadly attached to thorax, appearing slender posterior to attachment, genital capsule occupying about one-third of length of abdomen; metafemora appearing somewhat enlarged, dorsal margin curving.

MALE GENITALIA: Figures 580–582. Vesica C-shaped, flat, not twisted, secondary gonopore undeveloped.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the structural similarity of the male genitalia to *funereus*.

DISTRIBUTION: Figure 499. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Western Highland Prov.*: 6.4 km. W of Wabag, 2020 m., June 13, 1963, J. Sedlacek collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 5♂♂. PAPUA NEW GUINEA: [*Prov. unknown*]: Eliptamin Valley, 1200–1350 m., July 1–15, 1959 (Brandt; Bishop), 1♂.

Sejanus hongkong, new species

Figures 498, 556–560, 571, 573–579

DIAGNOSIS: Recognized by the faded red-orange coloration, the woolly, sericeous vestiture of the dorsum (fig. 571), the black spots at the bases of pale spines on the tibiae, the dimension, and the form of the male genitalia (figs. 577–579).

DESCRIPTION: Macropterous male. Small, parallel-sided, length apex tylus-cuneal fracture 1.89, width pronotum 0.81; general coloration faded red-orange to brownish red, femora, costa, part of cuneus, and veins of membrane often strongly reddish (fig. 571); all femora with some small dark brown spots; all tibiae nearly white, with dark brown bases of spines; membrane weakly red-orange.

Body surface smooth, dull; dorsum clothed with recumbent, brown, simple setae, intermixed with recumbent, sericeous, woolly setae; vertex, frons, and anterior margin of pronotum with numerous suberect long black setae; antennae with reclining or recumbent short vestiture, segment one with a few erect spines; meso- and meta-femoral trichobothria as in figures 557 and 558; all tibiae with reclining pale common setae, protibiae with a few relatively short, pale, suberect spines, meso- and meta-tibiae with more numerous, pale, suberect, spines about twice as long as tibial diameter; pro- and meso-tibiae without rows of black spicules, metatibiae with several rows.

Vertex nearly horizontal, posterior margin straight between eyes and very broadly rounded; frons flat in dorsal view, head more or less rectangular in appearance; eyes occupying entire height of head in lateral view (fig. 574); antennal segment two cylindrical, diameter slightly less than that of segment one; genae as wide as diameter of antennal segment two; gula obsolete; labium reaching to apex of mesocoxae; pronotum longitudinally nearly horizontal, lateral margins nearly straight and rather strongly converging anteriorly; mesoscutum broadly exposed to width equal to one and one-half times diameter of antennal segment two, at most weakly elevated, separated from scutellum by a distinct nearly straight impression; scutellum flat; hemelytra nearly flat; cuneal incisure distinct; large cell of membrane broadly rounded posteromesially; metathoracic scent-gland evaporatory area as in figure 556; abdomen more or less broadly attached to thorax, tapering posteriorly, genital capsule occupying about one-fourth of length of abdomen; metafemora appearing somewhat enlarged, dorsal surface distinctly curving; pretarsus as in figure 559, mesioventral surface of claw as in figure 560.

MALE GENITALIA: Figures 577–579. Vesica sigmoid, weakly twisted, secondary gonopore developed, moderately large, apex of vesica acuminate, noticeably surpassing secondary gonopore, not heavily sclerotized.

FEMALE: See generic discussion.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Hong Kong; a noun in apposition.

DISTRIBUTION: Figure 498. Hong Kong.

HOLOTYPE ♂: HONG KONG: N.T., Taipokau, September 18, 1965, light trap, Lee Kit Ming and Jui Wai Ming collectors; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype except June 1–July 6, 1964 and October 1–18, 1965 (AMNH, Bishop), 23♂♂, 10♀♀. HONG KONG: N.T., Castle Peak, August 6–13, 1964 (Voss and Ming; Bishop), 1♂; Hong Kong Island, Pokfulan, 150 m., May 29–31, 1964, light trap (Gressitt; Bishop), 7♂♂, 5♀♀.

Sejanus isarog, new species

Figures 498, 572, 583–585

Diagnosis: Recognized by the generally castaneous coloration, the ivory markings, on the base of the cuneus, which are generally confluent, forming a broad band (fig. 572), the yellow-brown third and fourth antennal segments, distal portion of profemora, pro- and meso-tibiae, and all tarsi, the dimensions, and the form of the male genitalia (figs. 583–585).

Description: Macropterous male. Small, parallel-sided, length apex tylus-cuneal fracture 1.79, width pronotum 0.93; general coloration castaneous, cuneus with basal ivory spots generally forming a broad, continuous band (fig. 572); antennal segments three and four, profemora distally, pro- and meso-tibiae, and all tarsi yellow-brown; membrane very dark.

Body surface smooth, dull; dorsum covered with brown, weakly shining common setae; antennae with vestiture of very short, neat, recumbent setae; all tibiae with short, reclining, pale common setae, pro- and meso-femora with a few suberect black spines about as long as tibial diameter, metatibiae with more numerous spines of slightly greater length; pro- and meso-tibiae without rows of tiny black spicules, metatibiae with several rows.

Vertex distinctly declining anteriorly, posterior margin straight across between eyes, smoothly rounded; frons flat in dorsal view, head more or less rectangular in appearance; height of eye slightly greater than height of head in lateral view; second antennal segment cylindrical, diameter about equal to that of segment one; genae and gula obsolete; labium just surpassing apex of metacoxae; pronotum gently declining anteriorly, lateral margins smoothly rounded, more or less strongly converging anteriorly; mesoscutum exposed to width about equal to diameter of antennal segment two, separated from scutellum by a distinct, nearly straight impression; scutellum nearly flat; hemelytra gently declining laterally; cuneal incisure shallow; large cell of membrane smoothly but rather sharply rounded posteromesially; abdomen more or less broadly attached to thorax, appearing narrow and parallel-sided over most of length, genital capsule occupying about one-fourth of length of abdomen; metafemora appearing slightly enlarged, dorsal surface smoothly curving.

Male Genitalia: Figures 583–585. Vesica C-shaped, flat, untwisted, secondary gonopore small, but relatively well developed.

Female: Unknown.

Measurements: See Appendix.

Etymology: Named for the type locality; a noun in apposition.

Distribution: Figure 498. Philippine Islands.

Holotype ♂: PHILIPPINE ISLANDS: *Luzon:* Camarines Sur, Mt. Isarog, Pili, 800 m., April 20, 1965, light trap, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

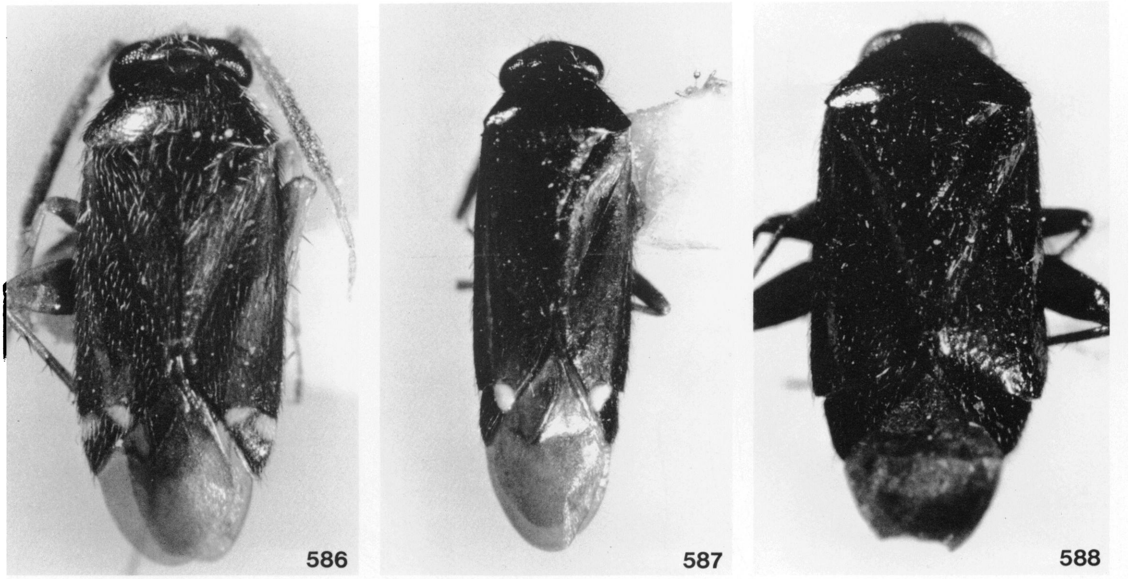
Paratypes: Same data as holotype, but 700 m., April 26, 1965 (Bishop), 1♂. PHILIPPINE ISLANDS: *Luzon:* Albay Prov., Mt. Mayon, 16 km. NW of Lagaspi, 1000–1500 m., May 8–17, 1962, light trap (Torrevillas; AMNH, Bishop), 7♂♂; Camarines Sur, Mt. Isarog, 750–800 m., May 13–15, 1963 (Torrevillas; Bishop), 1♂; Mountain Prov., Liwo, 8 km. E of Mayoyao, 1000–1300 m., June 6–8, 1967 (Torrevillas; Bishop), 1♂; Mountain Prov., Mayoyao, Ifugao, 1200–1500 m., September 19, 1966 (Torrevillas; Bishop), 1♂. *Negros Island:* Camp Lookout, Dumaguete, May 28, 1961 (Schneirla and Reyes; AMNH), 1♂.

Additional Specimens: PHILIPPINE ISLANDS: *Mindanao:* Bukidnon, Mt. Katanglad, 1250 m., October 26, 1959, light trap (Quate and Yoshimoto; Bishop), 1♂.

Sejanus luzonicus, new species

Figures 498, 586, 589–591

Diagnosis: Recognized by its basic dark brown coloration, the two distinct ivory spots



Figs. 586–588. *Sejanus* spp. 586. *S. luzonicus,* holotype. 587. *S. macer,* ♂, Indonesia, West Irian, Lake Anggi Giji. 588. *S. melas,* holotype.

on the cuneus (fig. 586), the reddish yellow coloration of antennal segments one, three and four, the proximal portion of antennal segment two, all femora distally, and all tibiae and tarsi, the relatively small size, ovoid shape, dimensions, and the form of the male genitalia (figs. 589–591).

Description: Macropterous male. Small, ovoid, length apex tylus-cuneal fracture 1.63, width pronotum 0.86; general coloration dark brown, cuneus with distinct ivory spots anteromesially and anterolaterally (fig. 586); reddish yellow as follows: antennal segments one, three, and four, proximal one-third of segment two, distal half of all femora, and all tibiae and tarsi; membrane dark brown.

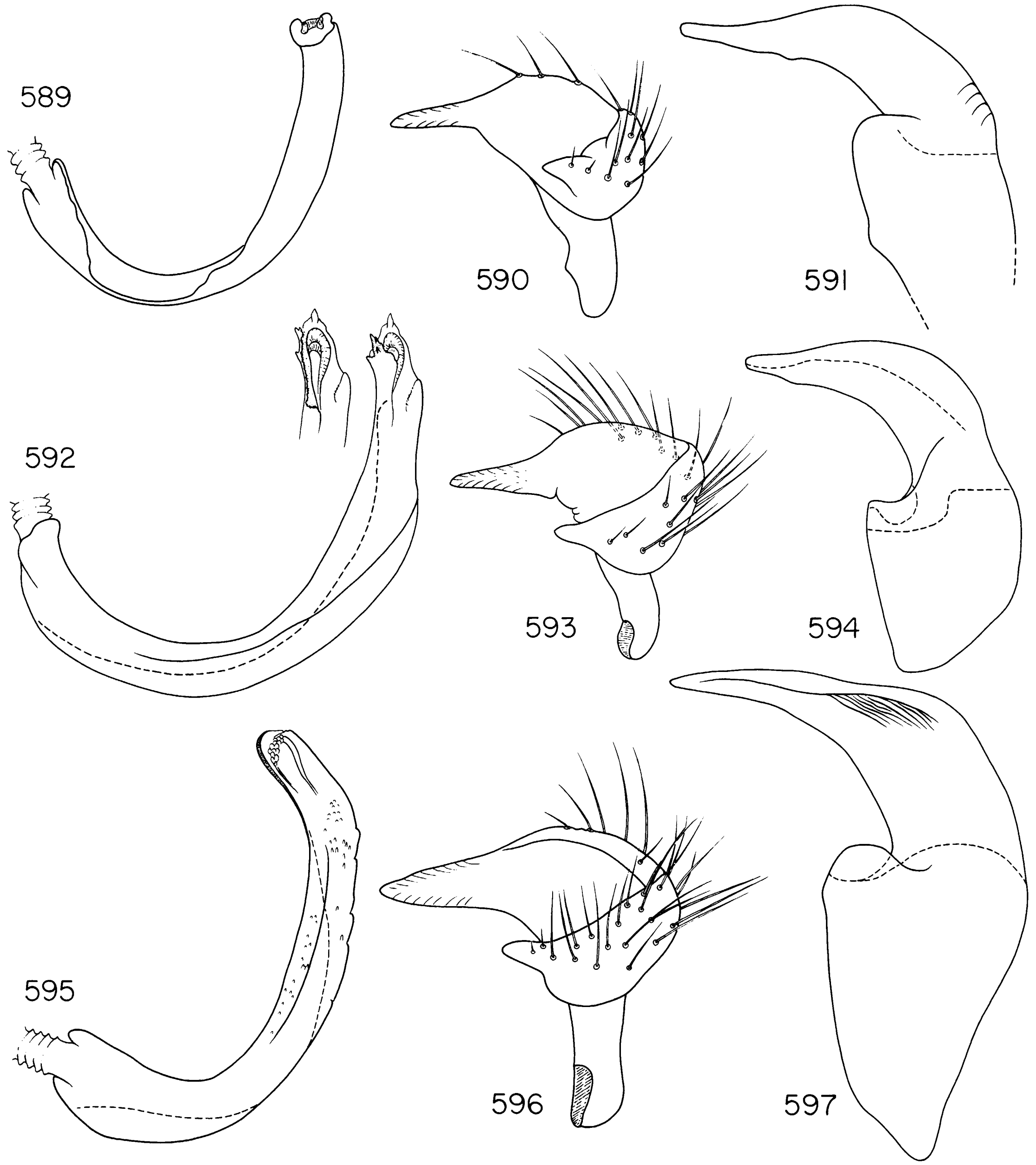
Body surface smooth, dull to weakly shining, pronotum very weakly rugulose; dorsum covered with recumbent, weakly shining simple setae; antennae with very short, recumbent vestiture and a few longer, fine, erect setae; all tibiae with reclining, pale, simple setae, pro- and meso-tibiae with a few slender black spines about as long as tibial diameter, metatibiae with greater numbers of somewhat longer spines; pro- and meso-tibiae without rows of tiny black spicules, metatibiae with several rows.

Vertex strongly declining anteriorly, posterior margin straight across between eyes, sharply rounded; frons straight across, head appearing more or less rectangular in dorsal view; height of eye equal to height of head in lateral view; antennal segment two cylindrical, diameter equal to that of segment one; genae about as wide as tibial diameter; gula obsolete; labium slightly surpassing apex of metacoxae; pronotum distinctly declining anteriorly, lateral margins nearly straight, moderately convergent anteriorly; mesoscutum exposed to width about equal to diameter of antennal segment one, distinctly elevated laterally above clavus, separated from scutellum by a nearly straight distinct impression; scutellum flat longitudinally, weakly transversely rounded; cuneal incisure obscure; large cell of membrane sharply angulate posteromesially; abdomen rather broadly attached to thorax, tapering posteriorly, genital capsule occupying about one-third of length of abdomen; metafemur appearing somewhat enlarged, dorsal surface curving.

Male Genitalia: Figures 589–591. Vesica C-shaped, not twisted, apex turned at right angles to shaft, secondary gonopore small.

Female: Unknown.

Measurements: See Appendix.



FIGS. 589–597. *Sejanus* spp. 589–591. *Sejanus luzonicus.* 589. Vesica. 590. Left paramere. 591. Phallotheca. 592–594. *Sejanus macer.* 592. Vesica and cutaway view of apex. 593. Left paramere. 594. Phallotheca. 595–597. *Sejanus melas.* 595. Vesica. 596. Left paramere. 597. Phallotheca.

ETYMOLOGY: Named for the island of Luzon.

DISTRIBUTION: Figure 498. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Camarines Sur Prov., Mt. Isarog, Pili, 800–900 m., April 21, 1965, light trap, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but

600–800 m. and April 13–20, 1965 (AMNH, Bishop), 3♂♂.

Sejanus macer, new species

Figures 499, 587, 592–594

DIAGNOSIS: See diagnosis for *elongatus*.

DESCRIPTION: Macropterous male. Coloration, body surface, vestiture, and structure very similar to *elongatus* except as noted below.

Length apex tylus-cuneal fracture 2.03, width pronotum 0.89; body, antennal segment one, all trochanters, all femora except at tibial articulation of pro- and meso-femora, and metatibiae castaneous (fig. 587).

Width of genae about equal to tibial diameter; labium reaching apex of metacoxae; pronotum distinctly declining anteriorly; mesoscutum exposed to width equal to diameter of antennal segment two; cuneal incisure distinct.

MALE GENITALIA: Figures 592–594. Similar to *elongatus*; distinguished most easily by the absence of sawtooth-like projections on shaft of vesica.

FEMALE: See generic discussion.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Latin, *macer*, lean or thin, referring to the elongate body form.

DISTRIBUTION: Figure 499. New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Sururai village area, W shore of Lake Anggi Gita, 1850 m., July 31, 1957, D. E. Hardy collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 4♂♂. INDONESIA: *West Irian:* Vogelkop, Irai River area, N of Lake Anggi Gita, 1850 m., July 31, 1957 (Hardy; Bishop), 1♂. PAPUA NEW GUINEA: *Southern Highlands Prov.:* Mt. Giluwa, 2520 m., May 27, 1963 (Sedlacek; Bishop), 1♂. *Western Highlands Prov.:* Tomba, slope of Mt. Hagen, 2450 m., May 22–24, 1963 (Sedlacek; Bishop), 1♂.

Sejanus melas, new species

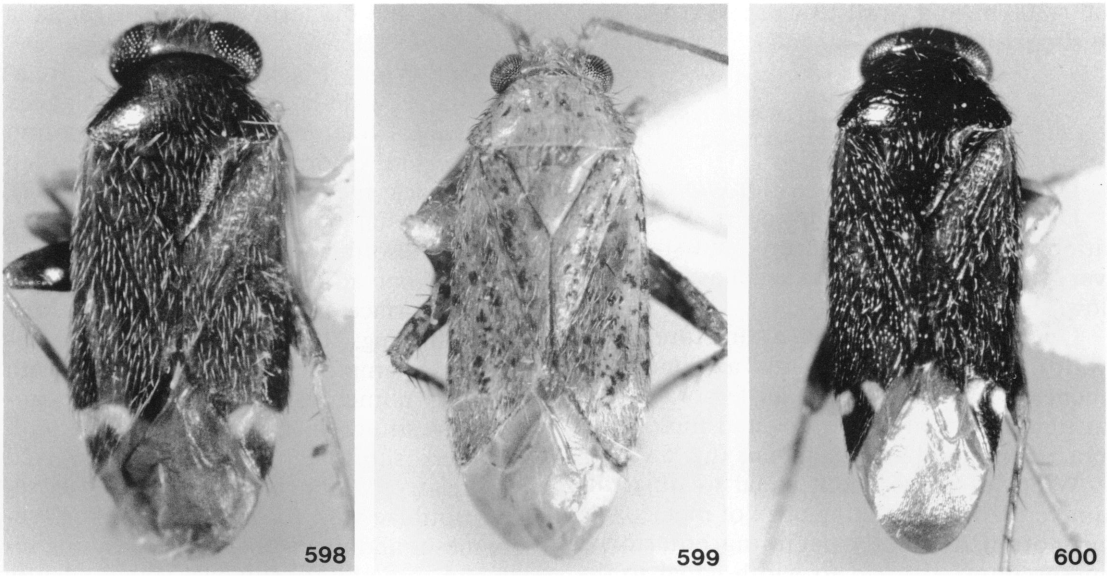
Figures 499, 588, 595–597

DIAGNOSIS: Recognized by the relatively large size, the broad, weakly ovate body, the highly polished, entirely castaneous dorsum (fig. 588), and the form of the male genitalia (figs. 595–597).

DESCRIPTION: Macropterous male. Relatively large, wide-bodied, ovoid, length apex tylus-cuneal fracture 1.94, width pronotum 1.50; general coloration deep castaneous to nearly black; membrane very dark (fig. 588); extreme distal portion of profemora, one-third of mesotibiae subdistally, and all tarsal segments one and two yellowish.

Body surface smooth, polished, and distinctly shining; dorsum clothed with recumbent, dark, simple setae; vertex and frons with relatively numerous suberect dark setae; antennal vestiture shaggy in appearance with relatively short reclining setae intermixed with relatively numerous suberect longer setae; protibiae with reclining simple dark setae, meso- and meta-tibiae with reclining setae and some black, suberect spines slightly longer than tibial diameter; pro- and mesotibiae without rows of black spicules, metatibiae with several rows.

Vertex steeply inclined, posterior margin weakly concave between eyes, sharply but smoothly rounded, frons nearly flat in dorsal view, head distinctly transverse in appearance, conforming to and covering anterior margin of pronotum; eyes occupying entire height of head in lateral view; antennal segment two more or less cylindrical (distorted in all available specimens), at most of slightly greater diameter than segment one; genae very narrow, width about one-half of tibial diameter; gula obsolete; apex of labium obscured in all available specimens; pronotum rather strongly declining anteriorly, weakly rounded, lateral margins more or less straight, strongly converging anteriorly, posterior margin weakly concavely angulate across mesoscutum; mesoscutum exposed to width equal to about two times diameter of antennal segment two, separated from scutellum by a distinct weakly sinuous impression, sharply declining laterally; scutellum weakly transversely rounded; hemelytra strongly transversely rounded, nearly parallel-sided; cuneal incisure rather deep, cuneus distinctly inset at base; large cell of membrane forming a right angle posteromesially; abdomen moderately broadly attached to thorax, tapering somewhat posteriorly, genital capsule occupying about two-fifths of length of abdomen;



FIGS. 598–600. *Sejanus* spp. 598. *S. neofunereus,* holotype. 599. *S. novocaledonicus,* ♀, New Caledonia, Noumea. 600. *S. serrulatus,* ♂, Papua New Guinea, Morobe Prov., Wau.

metafemora only weakly enlarged, dorsal surface weakly curving.

MALE GENITALIA: Figures 595–597. Vesica flattened, more or less C-shaped, shaft mesially with small spicules, secondary gonopore rather weakly developed, apex rounded, without spine, barely surpassing secondary gonopore.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Greek, *melas,* black, indicating the totally black shining coloration.

DISTRIBUTION: Figure 499. Papua New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Madang Prov.:* Finisterre Mountains, Moro Crater, 5500 feet, October 30–November 15, 1964, M. E. Bacchus collector; deposited in the British Museum (Nat. Hist.).

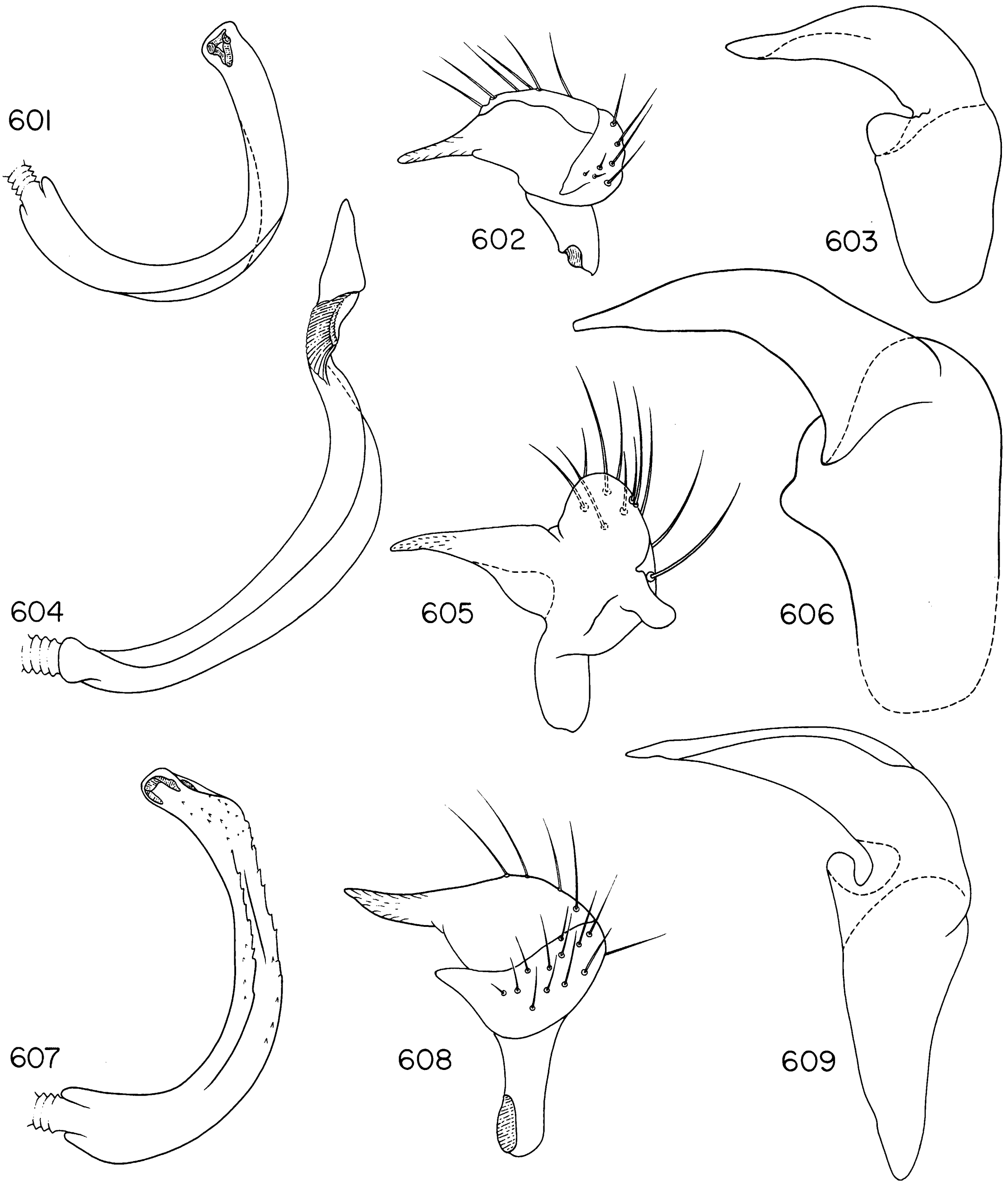
PARATYPES: Same data as holotype (AMNH, BMNH), 4♂♂.

Sejanus neofunereus, new species
Figures 498, 598, 601–603

DIAGNOSIS: Recognized by its small size and ovoid shape similar to that of *funerellus* and *funereus* (length apex tylus-cuneal fracture 1.53, width pronotum 0.78) the general deep brown coloration, including meso- and meta-femora, two distinct (sometimes confluent) ivory spots basally on the cuneus (fig. 598), and antennal segment one, antennal segment two proximally, and all tibiae and tarsi nearly white; male genitalia (figs. 601–603) similar in form to those of *funerellus, funereus,* and *funerioides.*

DESCRIPTION: Macropterous male. Relatively small, ovoid, length apex tylus-cuneal fracture 1.53, width pronotum 0.78; general coloration deep brown, including meso- and meta-femora and all coxae; membrane smoky; cuneus basally with two large (sometimes confluent) ivory spots (fig. 598); antennal segment one, antennal segments two and three basally, and all tibiae and tarsi nearly white; remainder of antennal segment two castaneous; remainder of antennal segment three and all of segment four light brown; profemora infuscate.

Structurally as in *funerellus,* except as follows: posterior margin of vertex weakly concave between eyes; labium reaching somewhat past apices of metacoxae; lateral margins of pronotum nearly straight; hemelytra moderately, not strongly, declining laterally; cuneal incisure distinct.



FIGS. 601–609. *Sejanus* spp. 601–603. *S. neofunereus*. 601. Vesica. 602. Left paramere. 603. Phallotheca. 604–606. *S. novocaledonicus*. 604. Vesica. 605. Left paramere. 606. Phallotheca. 607–609. *S. serrulatus*. 607. Vesica. 608. Left paramere. 609. Phallotheca.

MALE GENITALIA: Figures 601–603. Vesica C-shaped, flattened, secondary gonopore small but developed, subapical, apex of vesica without spines; phallotheca L-shaped, elongate but not strongly attenuated apically, basal portion rather narrow and nearly parallel-sided; left paramere somewhat splayed out, posterior process narrow, moderately elongate, setae heavy.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its similarity of appearance to *funereus.*

DISTRIBUTION: Figure 498. Hong Kong, Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Leyte:* Abuyog, 35 mi. S of Tacloban, July 5–8, 1961, Philippine Islands National Museum and American Museum of Natural History Expeditions; deposited in the American Museum of Natural History, New York.

PARATYPES: HONG KONG: Hong Kong Island, Pokfulan, 150 m., May 29–30, 1964, light trap (Gressitt; AMNH, Bishop), 5♂♂; Taipokau, June 1–July 4, 1964, light trap (Voss and Ming; AMNH, Bishop), 7♂♂. PHILIPPINE ISLANDS: *Leyte:* Dagami, 14 mi. SW of Tacloban, July 18, 1961 (AMNH), 1♂. *Luzon:* Isabella Prov., San Mariano, May 15–20, 1961 (AMNH), 2♂♂; Mountain Prov., Liwo, 8 km. E of Mayoyao, 1000–1300 m., June 11–12, 1967 (Torrevillas; Bishop), 1♂. *Negros Island:* Camp Lookout, Dumaguete, February 15–May 17, 1961 (Schneirla and Reyes), 2♂♂.

Sejanus novocaledonicus, new species

Figures 500, 599, 604–606

DIAGNOSIS: Recognized by its yellowish background coloration with faint red-orange longitudinal stripes on the pronotum, similar to *biniguni,* and the distinctive, small, scattered, bright red spots on the clavus, corium, and cuneus (fig. 599); distinctly larger than *biniguni*; form of male genitalia also distinctive (figs. 604–606).

DESCRIPTION: Macropterous male. Elongate, nearly parallel-sided, length apex tylus-cuneal fracture 2.09, width pronotum 0.96; general coloration yellowish, eyes maroon, pronotum with four weak longitudinal red-orange stripes; clavus, corium, and cuneus with small, scattered, bright red spots (fig. 599); profemora with a few, meso- and metafemora with more numerous diffuse red spots; antennal segments one and two brownish, segments three and four dark brown; all tibial spines with red bases; membrane smoky.

Similar in structure to *biniguni,* except as follows: genae of width about equal to diameter of antennal segment one; gula very short, depressed mesially at posterior margin of buccal cavity, lateral margins straight posteriorly, rounded anteriorly; mesoscutum exposed by width slightly greater than diameter of antennal segment one, separated from scutellum by a distinct nearly straight impression; large cell of membrane smoothly rounded posteromesially; metafemora somewhat enlarged, gently curving dorsally.

MALE GENITALIA: Figures 604–606. Vesica weakly sinuous, not strongly twisted, secondary gonopore strongly developed, apex of vesica in the form of an elongate triangle; phallotheca more or less L-shaped, elongate and attenuated apically, basal portion broad at junction with distal portion; left paramere somewhat distorted in only available dissection.

FEMALE: See generic discussion.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on New Caledonia.

DISTRIBUTION: Figure 500. New Caledonia.

HOLOTYPE ♂: NEW CALEDONIA: Ouano Beach, November 13, 1958, C. R. Joyce collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: NEW CALEDONIA: hills behind Noumea, August 1940, ex *Casuarina collina* (Williams; Bishop), 1♀; Plum, 20–60 m., March 23–25, 1968, light trap (Gressitt; Bishop), 1♀.

Sejanus priscillianus (Distant)

Idiatus priscillianus Distant, 1910a, p. 20.

DIAGNOSIS: Most similar in size and general appearance to *funereus* and other small species; distinguished by its coloration, especially the yellowish procoxae, trochanters, and pro- and meso-femora. Although the genitalia have not been studied, I would predict a simple C-shaped vesica with a weakly developed secondary gonopore.

DESCRIPTION: Macropterous male. Relatively small, more or less parallel-sided, ovoid, length apex tylus-cuneal fracture 1.93, width pronotum 0.88; general coloration castaneous, membrane pale smoky; cuneus with large ivory spots anteromesially and anterolaterally, appearing at least weakly confluent; yellow-white as follows: antennal segment one, proximal one-third of antennal segment two, proximal two-thirds of antennal segment three, procoxae, all trochanters, pro- and meso-tibiae and all tibiae and tarsi.

Body surface smooth, weakly shining, scutellum transversely rugulose; dorsum covered with recumbent, rather short, weakly shining, brown simple setae; antennae with very short, neat recumbent vestiture; all tibiae with reclining to recumbent pale common setae; protibiae with very few, meso- and meta-tibiae with greater numbers of suberect, dark brown spines about as long as tibial diameter; pro- and meso-tibiae without rows of tiny black spicules, metatibiae with several rows.

Vertex weakly declining anteriorly, posterior margin straight between eyes, moderately sharply rounded, frons nearly straight across as viewed from above, not projecting beyond eyes, head more or less rectangular in appearance; in lateral view eyes occupying slightly more than height of head, head not projecting beyond eyes; antennal segment two increasing very slightly in diameter distally, maximum diameter about equal to that of segment one; genae and gula obsolete; labium reaching to about apex of mesocoxae; pronotum only weakly declining anteriorly, lateral margins nearly straight, not strongly converging anteriorly (mesoscutum almost completely obliterated by pin in only available specimen, the holotype); scutellum nearly flat, separated from mesoscutum by a very distinct, uniform, nearly straight impression; hemelytra apparently weakly declining laterally; cuneal incisure deep, cuneus very strongly rounded basolaterally; large cell of membrane angulate and sharply rounded posteromesially; abdomen broadly attached to thorax, tapering toward genital capsule, genital capsule occupying slightly more than one-third of length of abdomen; metafemora at most appearing weakly enlarged, dorsal margin weakly curving.

MALE GENITALIA: Not examined.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

DISTRIBUTION: India, West Bengal.

SPECIMEN EXAMINED: INDIA: West Bengal, Paresnath, 4000- 4400 feet, October 10, 1909 (Annandale; BMNH), 1♂ (holotype).

DISCUSSION: The only available specimen in the British Museum collections is a male from West Bengal, even though Distant listed other material from the Simla Hills. I have not designated the West Bengal specimen as a lectotype, nor have I dissected it because it is pinned through the pronotum and almost certainly would have broken in half when attempting to remove the abdomen.

Sejanus serrulatus, new species

Figures 500, 600, 607–609

DIAGNOSIS: Recognized by the generally castaneous coloration, two ivory spots basally on the cuneus, shining pronotum and scutellum with simple setae, dull hemelytra with simple setae intermixed with subappressed, sericeous, woolly setae (fig. 600), the dimensions, and the form of the male genitalia (figs. 607–609).

DESCRIPTION: Macropterous male. Moderately large, elongate, weakly ovoid, length apex tylus-cuneal fracture 1.96, width pronotum 0.94; general coloration castaneous to nearly black, cuneus basally with two distinct, rounded, ivory spots, membrane smoky (fig. 600); antennal segment one, extreme base of antennal segment two, apices of all femora, and all tibiae and tarsi light yellow; antennal segments three and four white.

Body surface smooth, head, pronotum, and scutellum shining, weakly rugulose, hemelytra dull, granulose; head, pronotum, and scutellum covered with reclining brown simple setae; hemelytra covered with reclining brown simple setae and subappressed, sericeous, woolly setae, mesoscutum and base of scutellum also with some sericeous setae (fig. 600); antennae clothed with short, neat, recumbent setae; protibiae with a few suberect black spines, meso- and meta-tibiae with greater numbers of black spines slightly longer than tibial diameter; pro- and meso-tibiae without rows of spicules, metatibiae with several rows.

Vertex steeply declining anteriorly, posterior margin smoothly rounded, nearly straight across between eyes; frons nearly straight across in dorsal view; head transverse in dorsal view, eyes smoothly rounded, head closely conforming to and obscuring anterior margin of pronotum; eyes occupying entire height of head, head not projecting beyond anterior margin of eyes; antennal segment two increasing slightly in diameter distally, greatest diameter slightly greater than that of segment one; genae and gula obsolete; labium reaching to apex of metacoxae; pronotum weakly sloping anteriorly, lateral margins weakly rounded, rather strongly converging anteriorly, posterior margin weakly concavely angulate across mesoscutum; mesoscutum exposed by width about equal to diameter of antennal segment two, distinctly declining laterally, separated from scutellum by a distinct, nearly straight impression; scutellum distinctly transversely rounded; hemelytra weakly declining laterally, lateral margins weakly convex, broadest slightly anterior to cuneal fracture, cuneal incisure very shallow; large cell of membrane right angulate and sharply rounded posteromesially; abdomen broadly attached to thorax, elongate, tapering posteriorly, genital capsule occupying slightly less than one-third of length of abdomen; metafemora appearing enlarged, dorsal surface curving.

Male Genitalia: Figures 607–609. Vesica more or less C-shaped, flattened, shaft with serrations and some spicules, secondary gonopore moderately developed, apex of vesica without spines.

Female: Unknown.

Measurements: See Appendix.

Etymology: From the Latin, *serra,* saw, describing the vesica of the male.

Distribution: Figure 500. New Guinea.

Holotype ♂: PAPUA NEW GUINEA: *Morobe Prov.:* Wau, August 11, 1972, MV light, G. G. E. Scudder collector; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype (AMNH, Bishop), 3♂♂. INDONESIA: *West Irian:* Bokondini, 40 km. N of Baliem Valley, *ca.* 1300 m., November 5–11, 1961, light trap (Quate and Quate; Bishop), 1♂; Swart Valley, Karubaka, November 10, 1958, light trap (Gressitt; Bishop), 1♂. PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Goroka, 1530 m. April 30–May 3, 1959 (Michener; Bishop), 1♂. *Madang Prov.:* Finisterre Mountains, Damanti, 3550 feet, October 2–11, 1964 (Bacchus; BMNH), 6♂♂; Finisterre Range, Saidor, Matoko, August 29–September 5, 1958 (Brandt; AMNH, Bishop), 3♂♂. *Milne Bay Prov.:* Maneau Range, north slope of Mt. Dayman, 1550 m., June 30–July 13, 1953 (Tate; AMNH), 1♂. *Western Highlands Prov.:* Korop, Upper Jimmi Valley, 840–1300 m., July 12–17, 1955, light trap (Gressitt; Bishop), 3♂♂; Tuenga, Upper Jimmi Valley, 1200 m., July 14, 1955 (Gressitt; Bishop), 5♂♂. [*Prov. unknown*]: Eliptamin Valley, 1200–1350 m., June 19–30 and September 1–15, 1959 (Brandt; AMNH, Bishop), 2♂♂.

Sejanus sinuosus, new species

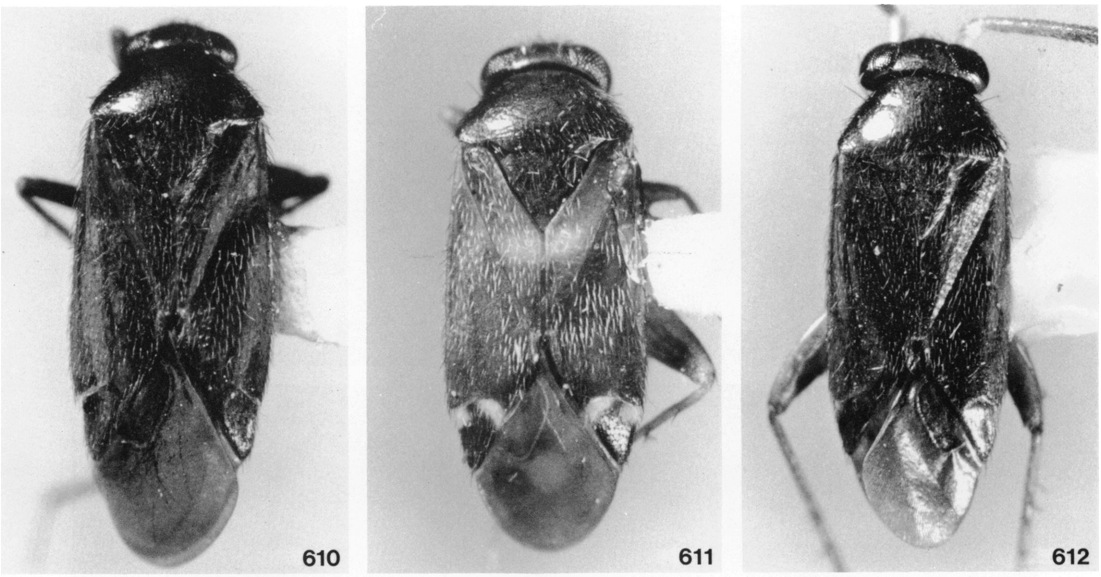
Figures 500, 610, 622–624

Diagnosis: Recognized by its mahogany to castaneous coloration without ivory spots on the cuneus, the elongate, more or less parallel-sided body form, the relatively small head and eyes (fig. 610), and the form of the male genitalia (figs. 622–624).

Description: Macropterous male. Moderately large, elongate, more or less parallel-sided, length apex tylus-cuneal fracture 1.91, width pronotum 0.90; general coloration mahogany to castaneous, antennal segment three proximally, profemora distally, and all tibiae and tarsi yellowish; membrane dark smoky (fig. 610).

Body surface smooth, weakly shining; dorsum clothed with neat, reclining, brown, simple setae; antennae clothed with neat, subappressed, short vestiture; all tibiae with reclining, pale, common setae; protibiae with a few suberect dark spines, meso- and metatibiae with greater numbers of dark spines of length slightly greater than tibial diameter; pro- and meso-tibiae without rows of spicules, metatibiae with several rows.

Head appearing relatively small, eyes small, vertex broad relative to total width of head, rounded, only moderately declining anteriorly, posterior margin smoothly but sharply rounded, nearly straight across between eyes; frons bulging and convex, distinctly projecting beyond eyes in dorsal view; occupying about four-fifths of height of head in lateral view; width of genae about equal to diameter of antennal segment two; gula short, length about equal to diameter of antennal segment one; apex of labium just surpassing apex of metacoxae; pronotum moderately declining anteriorly, lateral margins weakly curving, rather strongly converging anteriorly, posterior margin nearly straight; mesoscutum ex-



FIGS. 610–612. *Sejanus* spp. 610. *S. sinuosus,* holotype. 611. *S. spiculatus,* holotype. 612. *S. umi,* holotype.

posed by distance about equal to diameter of tibia, slightly declining laterally, separated from scutellum by a deep, somewhat irregular impression; scutellum weakly transversely rounded; hemelytra distinctly declining laterally, lateral margins weakly convex, cuneal incisure distinct, base of cuneus inset; large cell of membrane angulate and irregularly rounded posteromesially; abdomen broadly joined to thorax, tapering posteriorly, genital capsule relatively small, occupying slightly less than one-third of abdominal length; metafemora somewhat enlarged, dorsal surface curving.

MALE GENITALIA: Figures 622–624. Vesica elongate, sigmoid, twisted, secondary gonopore not developed, apex of vesica with complex membranous lobes.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Latin, *sinuosus,* full of bends, to describe the vesica of the male.

DISTRIBUTION: Figure 500. New Guinea, New Britain.

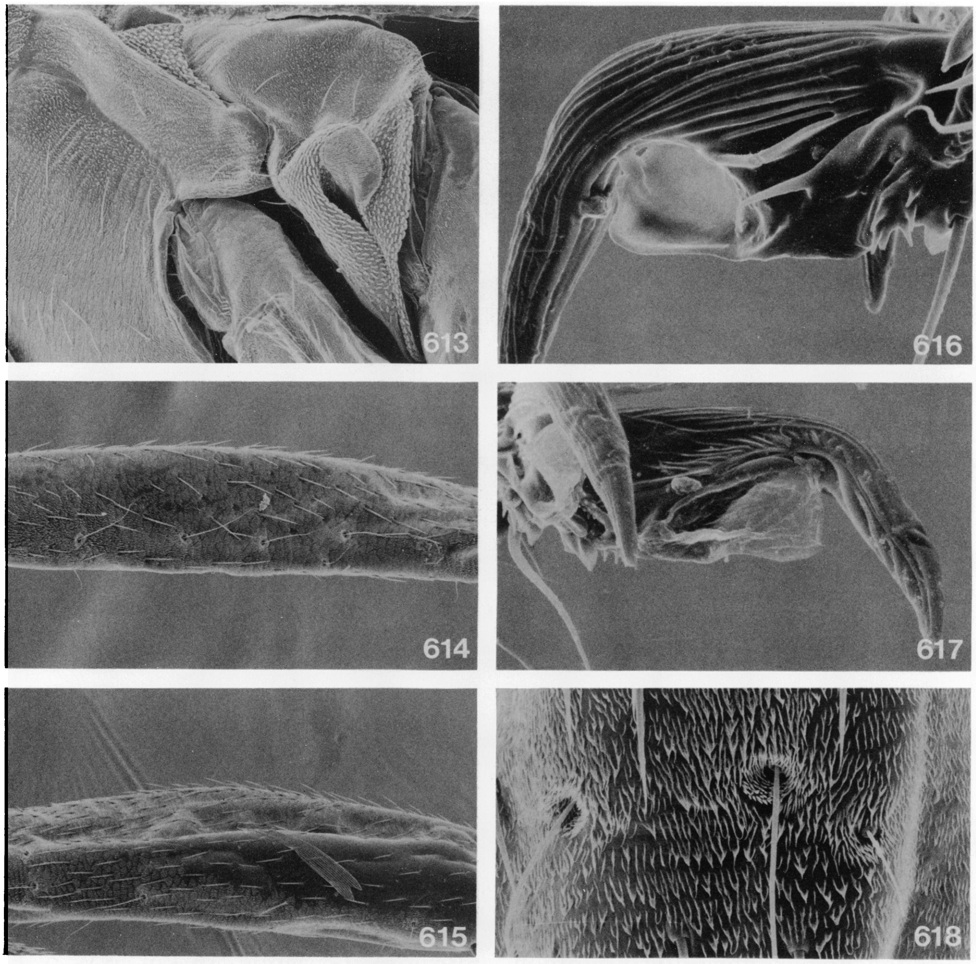
HOLOTYPE ♂: PAPUA NEW GUINEA: *Morobe Prov.:* Mindik, 1200–1600 m., September 1968, N. L. H. Krauss collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 2♂♂. PAPUA NEW GUINEA: *Central Prov.:* Owen Stanley Range, Goilala, Bome, 1950 m., April 30–May 2, 1958 (Brandt; Bishop), 1♂. *Eastern Highlands Prov.:* Aiyura, 1620 m., October 19–24, 1959, sweeping (Maa; Bishop), 1♂; Asaro Valley, Miramar, 1800 m., June 27, 1955 (Gressitt; Bishop), 1♂; Moife, 15 km. NW of Okapa, 2100 m., October 7–14, 1959 (Maa; AMNH, Bishop), 10♂♂; Tapo, 3 km. NW of Kainantu, 1650 m., October 22, 1959 (Maa; AMNH, Bishop), 6♂♂. *East New Britain Prov.:* Vanabakan, 10 km. E of Keravat, November 16–20, 1959 (Maa; Bishop), 5♂♂. *Morobe Prov.:* Arabuka, 1500–2000 m., January 7, 1968 (Sedlacek and Sedlacek; Bishop), 1♂. *West Sepik Prov.:* Torricelli Mountains, Nengian village, November 17–24, 1958 (Brandt; Bishop), 1♂.

Sejanus spiculatus, new species

Figures 500, 611, 625–627

DIAGNOSIS: Recognized by the varied coloration of the dorsum with ivory markings on the cuneus and a white transverse macula on the clavus just posterior to the scutellum (fig. 611), the generally light-colored legs, di-



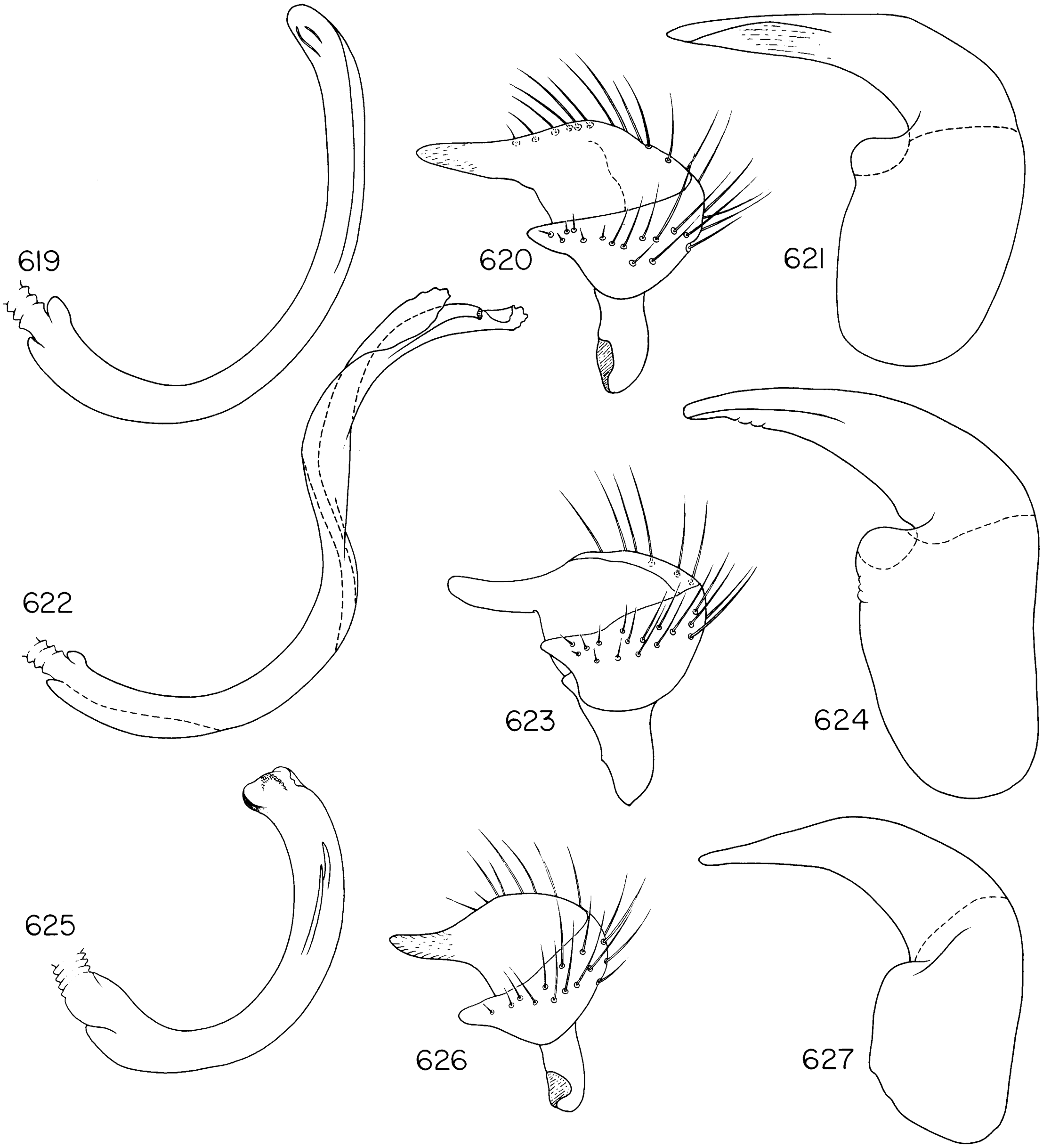
FIGS. 613–618. *Sejanus umi.* 613. Lateral view of metathorax. 614. Mesofemur showing trichobothria. 615. Metafemur showing trichobothria. 616. View of lateral surface of claw. 617. Pretarsus. 618. Detail of trichobothria of metafemur.

mensions, and the form of the male genitalia (figs. 625–627).

DESCRIPTION: Macropterous male. Moderate-sized, relatively stout-bodied, more or less parallel-sided, length apex tylus-cuneal fracture 1.77, width pronotum 0.87; general coloration mahogany, hemelytra somewhat lighter, clavus with a somewhat diffuse white transverse macula just posterior to scutellum; cuneus basally with two distinct ivory spots; membrane smoky (fig. 611); antennal segment one, extreme proximal portion of antennal segment two, all coxae distally, all trochanters, pro- and meso-femora, and all tibiae and tarsi yellow; metafemora yellow proximally, strongly reddish distally; antennal segments three and four missing or mutilated in most available specimens.

Body surface smooth, weakly shining; dorsum clothed with neat, recumbent, weakly golden, simple setae; antennal vestiture of short, neat, recumbent setae; all tibiae with short reclining simple setae, protibiae with a few dark semierect spines, meso- and metatibiae with greater numbers of dark spines of length slightly greater than tibial diameter; pro- and meso-tibiae without rows of tiny spicules, metatibiae with several rows.

Vertex weakly declining anteriorly, posterior margin rather broadly rounded, weakly



FIGS. 619–627. *Sejanus* spp. 619–621. *S. umi.* 619. Vesica. 620. Left paramere. 621. Phallotheca. 622–624. *S. sinuosus.* 622. Vesica. 623. Left paramere. 624. Phallotheca. 625–627. *S. spiculatus.* 625. Vesica. 626. Left paramere. 627. Phallotheca.

concave between eyes; frons flat in dorsal view, even with anterior margin of eyes; head more or less rectangular in dorsal view; height of eyes slightly greater than height of head in lateral view; antennal segment two cylindrical, diameter about equal to that of segment one; genae and gula obsolete; labium just surpassing apex of metacoxae (broken in holotype); pronotum gently declining anteriorly, lateral margins weakly rounded, rather strongly converging anteriorly, posterior margin straight across mesoscutum; mesoscutum exposed to width slightly greater than diameter of antennal segment two, sharply declining laterally, separated from scutellum by a distinct straight, impression; scutellum almost flat; hemelytra distinctly declining laterally, lateral margins almost straight; cuneal incisure distinct, base of cuneus inset; large cell of membrane right angulate and sharply rounded posteromesially; abdomen more or less broadly attached to thorax, tapering posteriorly, genital capsule small, length equal to about one-fourth length of abdomen; metafemora somewhat enlarged, dorsal surface smoothly curving.

MALE GENITALIA: Figures 625–627. Vesica C-shaped, flattened, shaft with two spicules mesially, secondary gonopore weakly developed.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Latin, *spiculatus,* a spicule, referring to the two spicules on the shaft of the vesica in the male.

DISTRIBUTION: Figure 500. Papua New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Western Highlands Prov.:* Taenga, Upper Jimmi Valley, 1200 m., July 14, 1955, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 1♂. PAPUA NEW GUINEA: *Madang Prov.:* Finisterre Mountains, Moro Crater, 5500 feet, October 30–November 15, 1964 (Bacchus; BMNH), 1♂. *Morobe Prov.:* Wau, August 14, 1972, MV light (Scudder; Bishop), 1♂. *Western Highlands Prov.:* Korop, Upper Jimmi Valley, 1300 m., July 12, 1955, light trap (Gressitt; AMNH, Bishop), 2♂♂.

Sejanus umi, new species

Figures 500, 612–621

DIAGNOSIS: Recognized by the blackish dorsum with contrasting yellowish head below eyes, prosternal xyphus, and appendages, the broad head which conforms weakly to the anterior margin of the pronotum, the roughly quadrate pronotum (fig. 612), the dimensions, and the form of the male genitalia (figs. 619–621).

DESCRIPTION: Macropterous male. Moderately large, parallel-sided, length apex tylus-cuneal fracture 2.12, width pronotum 0.97; general coloration nearly black; head below eyes, prosternal xyphus, antennal segment one, antennal segment two on proximal portion or entirely, pro- and meso-coxae, metacoxae distally, all trochanters, and pro- and meso-femora, tibiae and tarsi yellow; metafemora, tibiae, and tarsi and antennal segments three and four infuscate; membrane very dark (fig. 612).

Dorsum smooth, polished, moderately shining, clothed with neat, recumbent, dark, simple setae; antennal vestiture short, neat, recumbent; meso- and meta-femoral trichobothria as in figures 614, 615, and 618; all tibiae with reclining, dark, short simple setae, pro- and meso-tibiae with some suberect black spines, metatibiae with more numerous black spines of length slightly greater than tibial diameter; pro- and meso-tibiae without rows of tiny spicules, metatibiae with several rows.

Vertex weakly declining anteriorly, posterior margin sharply rounded, nearly straight between eyes; head rectangular in dorsal view, broad, not strongly conforming to anterior margin of pronotum; frons nearly flat in dorsal view and not projecting beyond anterior margin of eyes; in lateral view, head projecting slightly beyond anterior margin of eyes, height of eye equal to height of head; genae very narrow, gula obsolete; labium relatively short, not quite reaching apex of mesocoxae; pronotum nearly horizontal, more or less quadrate in dorsal view, lateral margins nearly straight, only weakly converging anteriorly, posterior margin very weakly excavated across pronotum; mesoscutum exposed by distance about equal to one and one-half times diameter of antennal segment two, slightly declining laterally, separated from scutellum by a distinct straight impression; scutellum almost flat; hemelytra only weakly declining laterally, lateral margins very weakly convex; cuneal incisure shallow, cuneus not inset; large cell of membrane angulate and sharply rounded posteromesially; abdomen more or less broadly attached to thorax, tapering posteriorly, length of genital capsule about one-fourth length of abdomen; metafemora slightly enlarged, dorsal surface smoothly curving; claw and pretarsus as in figures 616 and 617.

MALE GENITALIA: Figures 619–621. Vesica more or less forming a short "J," flat, secondary gonopore very poorly developed, apex of vesica simple, without spine; phallotheca L-shaped, base broad, apex long and tapering; left paramere stout, posterior process elevated, moderately elongate and broad.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 500. New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Morobe Prov.:* Umi River, Markham Valley, 480 m., November 23, 1959, L. J. Brass collector; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype, but also November 17–21 (AMNH), 3♂♂. INDONESIA: *Irian Jaya:* Waigeu, Camp Nok, 2500 feet, April 1938 (Cheeseman; BMNH), 1♂. PAPUA NEW GUINEA: *Madang Prov.:* Finisterre Range, Saidor, Gabumi, July 1–21, 1958 (Brandt; Bishop), 1♂. *Milne Bay Prov.:* Biniguni, Gwari River, July 27–August 14, 1953 (Tate; AMNH), 2♂♂. *Morobe Prov.:* Wau, August 11, 1972, MV light (Scudder; Bishop), 1♂. *Northern Prov.:* Kokoda, 1200 feet, July 1933 (Cheeseman; BMNH), 1♂; Kokoda, 400 m., September 15–20, 1965, light trap (Sedlacek and Sedlacek; Bishop), 2♂♂. *West Sepik Prov.:* Torricelli Mountains, Mokai village, 750 m., December 8–15, 1958 (Brandt; Bishop), 1♂. *Western Highlands Prov.:* Central Mountains, Archbold Lake, 760 m., November 26–December 3, 1961, light trap (Quate and Quate; Bishop), 1♂; Korop, Upper Jimmi Valley, 1300 m., July 12, 1955, light trap (Gressitt; Bishop), 3♂♂. [*Prov. unknown*]: Eliptamin Valley, 1200–1350 m., August 1–15, 1959 (Brandt; Bishop), 1♂.

TYTTHUS FIEBER

Tytthus Fieber, 1864, p. 82; Carvalho and Southwood, 1955, pp. 11–19; Schuh, 1974, p. 135.

DIAGNOSIS: Of those Indo-Pacific Miridae with phyline type male genitalia, species of *Tytthus* can be recognized by the form of the head (the eyes being exserted, with their posterior margins slightly removed from the anterior margins of the pronotum; figs. 630–632), the pronotum with a finely upturned carinate anterior margin, and the elongate parallel-sided body, the slender abdomen, the small genital capsule and the U-shaped untwisted vesica of the male genitalia (figs. 639, 642, 645). The second antennal segment shows a weak sexual dimorphism, in the males being cylindrical and subequal in diameter to segment one, and in the females being of noticeably smaller diameter than segment one and tapering slightly basally.

MALE GENITALIA: Vesica simple, often C-shaped, at most weakly twisted, secondary gonopore at most weakly developed (figs. 639, 642, 645); phallotheca nearly rectilinear to L-shaped (figs. 640, 643, 646); left paramere broadly boat-shaped, anterior and posterior processes subequal in length, posterior process rather broad and elevated above anterior process (figs. 641, 644, 647); see also Carvalho and Southwood, (1955).

FEMALE GENITALIA: See Schuh, 1974, p. 135.

DISTRIBUTION: Figures 628 and 629. Cosmopolitan.

DISCUSSION: Until the revisionary work of Carvalho and Southwood (1955), *Tytthus* (Phylinae) and *Cyrtorhinus* (Orthotylinae) were regularly confused and most members of the former genus were described in the latter. Carvalho and Southwood (1955) demonstrated conclusively that groups belonging to two different subfamilies were represented. *Tytthus* species show substantial variation in size and wing development, but are held together by the structure of the head and the genitalia. The genitalia of all *Tytthus* species are quite similar and in many cases the best distinguishing characteristics seem to be those of coloration.

Tytthus chinensis Stål

Figures 628, 630, 633–641

Tytthus chinensis Stål, 1859, p. 258; Carvalho and Southwood, 1955, p. 19.

DIAGNOSIS: Among the Oriental and Pacific species of *Tytthus chinensis* can be recognized by the entirely black first antennal segment. Head and prothorax as in figures 635–638; metathoracic scent-gland evaporatory area as in figure 633; pretarsus as in figure 634.

MALE GENITALIA: Figures 639–641.

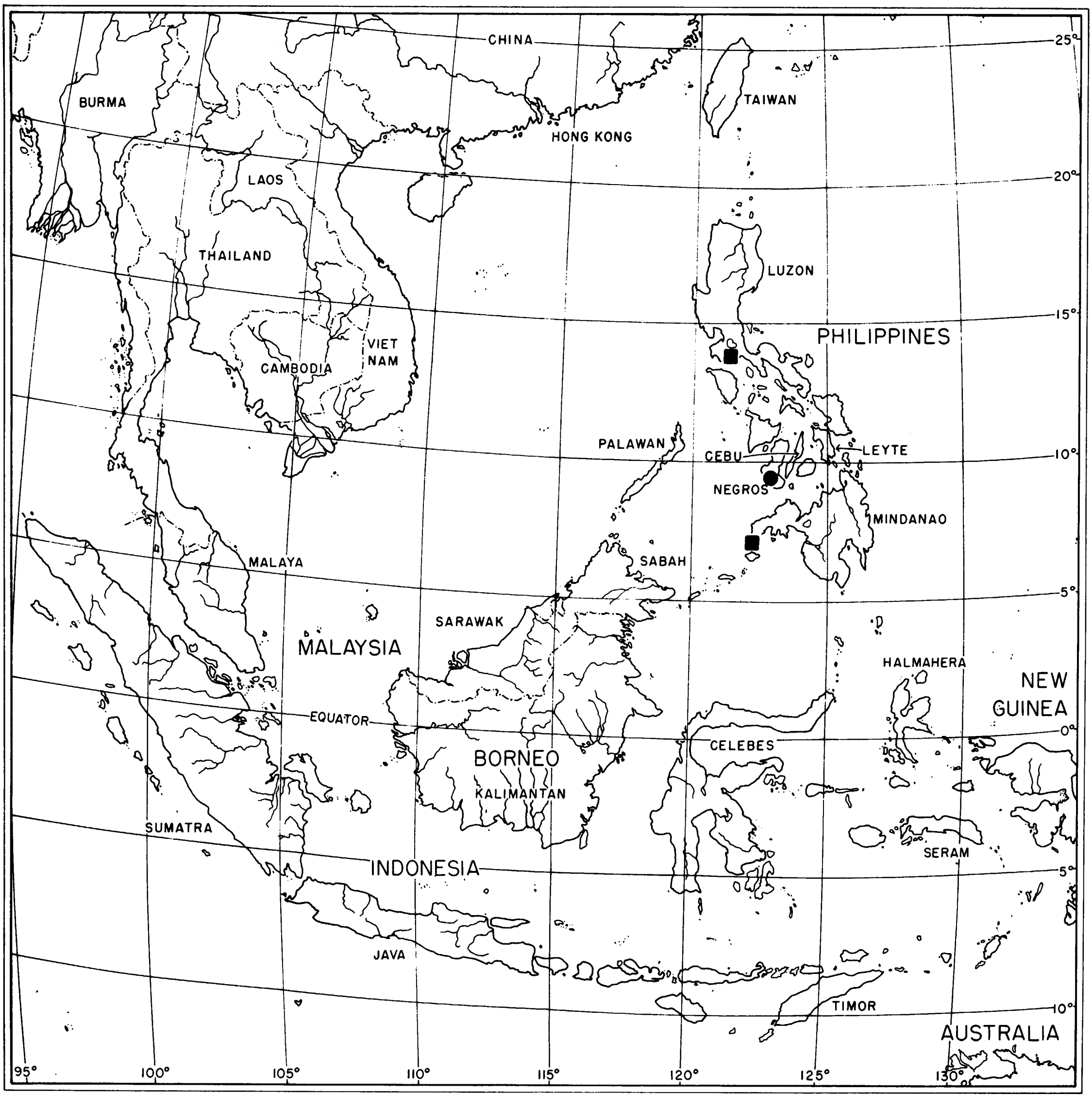

CHINA
BURMA
TAIWAN
HONG KONG
LAOS
THAILAND
LUZON
PHILIPPINES
VIET NAM
CAMBODIA
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
MALAYA
SABAH
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

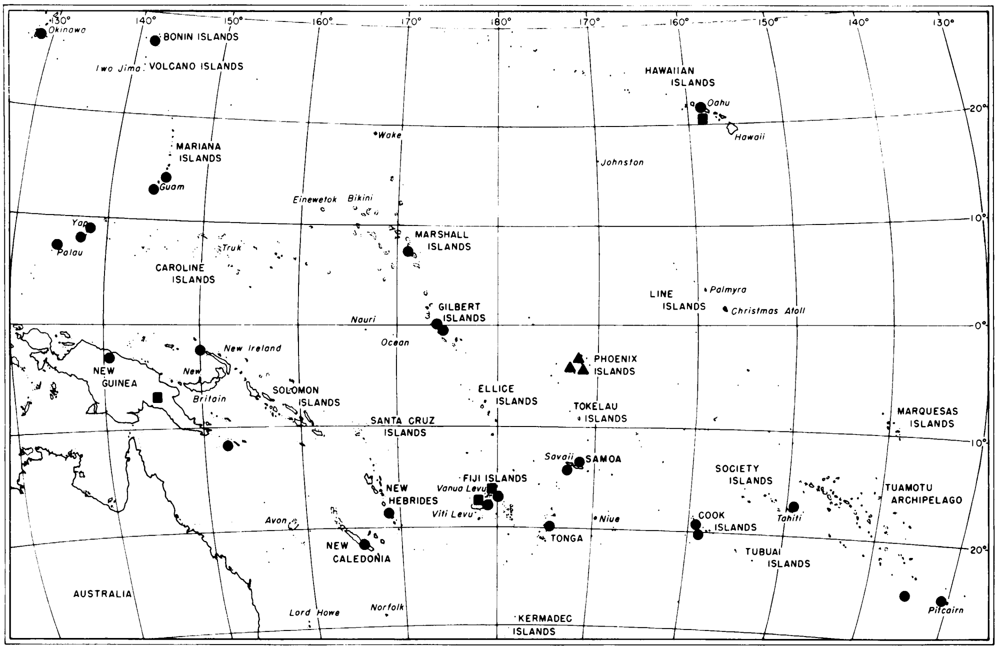
FIG. 628. Distribution of *Tytthus* spp. *T. chinensis* (in part) (●); *T. mundulus* (in part) (■).

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figures 628 and 629. Widely distributed in the western Pacific and Indo-Malaya as far west as Sri Lanka and India. In addition to the localities listed below, Carvalho and Southwood (1955) listed *chinensis* as occurring in China, Formosa, and Faraulep Atoll in the Caroline Islands.

SPECIMENS EXAMINED: BONIN ISLANDS: *Chichi Jima:* Futami-ko, May 10, 1956, at light (Clagg; Bishop) 1♂, 3♀♀; Miyanohama, Jack Williams Beach, April 15–21, 1958 (Snyder; Bishop), 1♂; Omura, Camp Beach, May 5–June 9, 1958 (Snyder; Bishop), 3♂♂, 3♀♀.

CAROLINE ISLANDS: *Ngulu Atoll:* Ngulu Island, October 3, 1952 (Krauss; Bishop), 1♂. *Palau Islands:* Koro Island, April 29, May 3, 1957, sweeping grasses (Sabrosky; Bishop), 5♂♂, 4♀♀; January 26, 1953, at light (Beardsley; Bishop), 1♂; Koro Island, November 30, 1947 (Dybas, Bishop), 1♂; Koror Island, July


130°
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160°
170°
180°
170°
160°
150°
140°
130°
20°
10°
0°
10°
20°
Okinawa
BONIN ISLANDS
Iwo Jima
VOLCANO ISLANDS
HAWAIIAN ISLANDS
Oahu
Hawaii
MARIANA ISLANDS
Guam
Wake
Johnston
Eniwetok
Bikini
Yap
Palau
Truk
CAROLINE ISLANDS
MARSHALL ISLANDS
LINE ISLANDS
Palmyra
Christmas Atoll
GILBERT ISLANDS
Nauru
Ocean
New Ireland
NEW GUINEA
New Britain
SOLOMON ISLANDS
PHOENIX ISLANDS
ELLICE ISLANDS
TOKELAU ISLANDS
MARQUESAS ISLANDS
SANTA CRUZ ISLANDS
Savaii
SAMOA
SOCIETY ISLANDS
FIJI ISLANDS
Vanua Levu
NEW HEBRIDES
Viti Levu
TUAMOTU ARCHIPELAGO
Tahiti
COOK ISLANDS
Niue
TONGA
Avon
NEW CALEDONIA
TUBUAI ISLANDS
AUSTRALIA
Lord Howe
Norfolk
KERMADEC ISLANDS
Pitcairn

FIG. 629. Distribution of *Tytthus* spp. (continued). *T. chinensis* (in part) (●); *T. mundulus* (in part) (■), and *T. zwaluwenbergi* (▲).

24, 1956 (McDaniel; Bishop), 1♂; Palau Island, Babelthaup, E Ngatpang, 65 m., December 6, 1952, light trap (Gressitt; Bishop), 1♂; Peleliu Island, North Central, July 30, August 5, 1945 (Dybas; Bishop), 2♂♂. *Yap Islands:* E Map Island, July–August 1950 (Gross; Bishop), 1♂; Yap Island, Colonia, July–August 1950 (Gross; Bishop), 1♂; Yap Island, Dugoi, July–August 1950 (Gross; Bishop), 1♂; Yap Island, Kanif, July–August 1950 (Gross; Bishop), 1♂; S Yap Island, July–August 1950 (Gross; Bishop), 1♀; Tomil District, July–August 1950 (Gross; Bishop), 1♀.

CHILDERS ISLAND: July 1921 (Pemberton; Bishop), 2♂♂, 2♀♀.

COOK ISLANDS: *Aitutaki:* Amuri, March 11–14, 1975, light trap (Dugdale, DSIR), 1♀. *Palmerston Atoll:* June 1–2, 1965 (Ramsay; DSIR), 1♂. *Raratonga:* Avatu Valley, October 18, 1975, M. V. light (Dugdale; DSIR), 1♂; Muri, October 12, 1975 (Dugdale; DSIR), 1♀; Papua Creek, Valmanga, October 13, 1975, M. V. light (DSIR), 2♂♂ Titikaveka, Biological Site, October 23, 1975 (Dugdale, Walker; DSIR), 2♂♂, 1♀; Totokoitu, Research Station, March 3–5, October 3–26, 1975, M. V. light (Dugdale, Walker; DSIR), 9♂♂, 2♀♀.

FIJI: *Ovalau:* October 19, 1924 (Bryan; Bishop), 1♂; Levuka, 0–200 m., December 1969 (Krauss; Bishop), 1♂. *Viti Levu:* Nandi, 0–100 m., April 5, 1973 (Krauss; Bishop), 1♂; Ba, January 1906 (Muir; Bishop), 1♂.

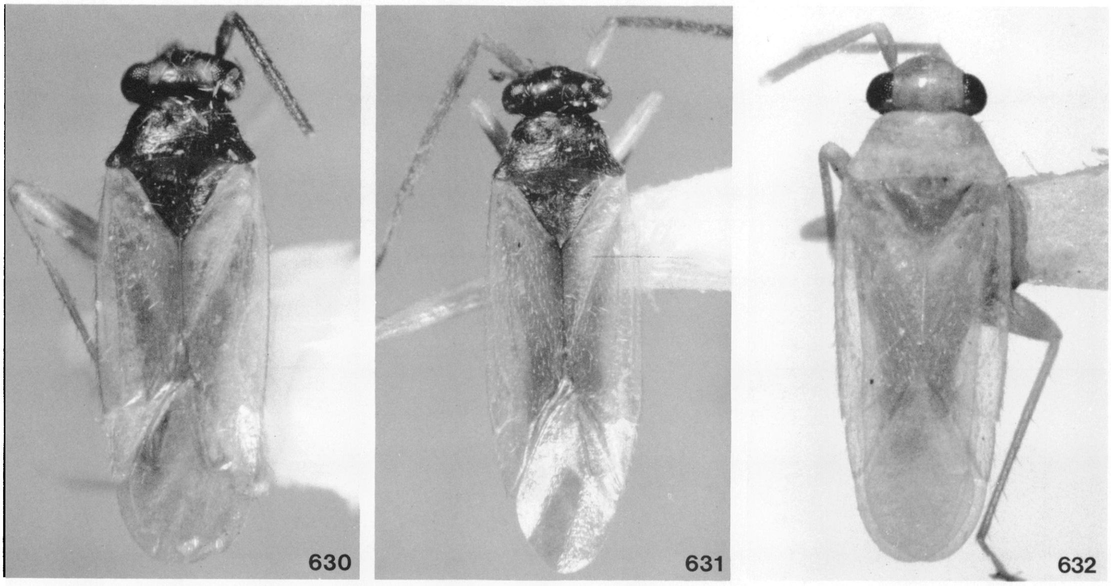
GILBERT ISLANDS: *Tarawa Atoll:* Bairiki Island, November 1957 (Krauss; Bishop), 1♀; Taborio, November 1957 (Krauss; Bishop), 1♀. *Abemana Atoll:* Kariutebike, 0–5 m., January 1970 (Krauss; Bishop), 1♀.

HAWAIIAN ISLANDS: *Oahu:* Honolulu, February 2, April 22, 1944, in plane (USNM), 2♂♂.

INDIA: Delhi, October 15, 1961, at light (Oman; USNM), 3♂♂.

INDONESIA: *West Irian:* Sentani SW of Cyclops, 100 m., June 15, 1959, M. V. light trap (Gressitt and Maa; Bishop), 1♀.

MARIANA ISLANDS: *Guam:* Pt. Oca, May 28, June 5, June 14, June 23, July 16, December 20, 1945, at light (Bohart and Gressitt; AMNH, Bishop), 31♂♂, 24♀♀; Talofofo, August 1952 (Krauss; Bishop), 2♂♂. *Saipan Island:* As Mahetog area, April 30, 1945, May 1, 1945, January 22, 1945, April 1945, at light (Dybas; Field Museum), 100 specimens; 1.2 mi. E of Tanapag, January 10, 1945,



FIGS. 630–632. *Tytthus* spp. 630. *T. chinensis,* ♂, Guam, Pt. Oca. 631. *T. mundulus,* ♂, Hawaii, Oahu, Pearl City. 632. *T. zwaluwenbergi,* ♂, Howland Island.

July 24, 1945, at light (Dybas), 1♀; Charan Kanoa, October 19, 1947 (Lange; Bishop), 1♀. *Tinian Island:* South end of island, June 11, 1946 (Townes; Bishop, USNM), 4♂♂, 1♀.

MARSHALL ISLANDS: *Jaluit Atoll:* Jabor Island, May 1, 1958 (Gressitt; Bishop), 6♂♂, 3♀♀.

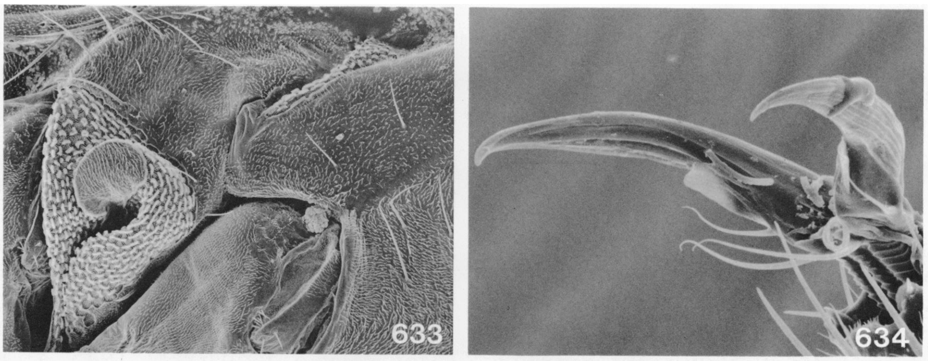
NEW CALEDONIA: Anse Vata, November 8, 1958, light trap (Joyce; Bishop), 1♀; Ouano Beach, November 13, 1958 (Joyce; Bishop), 1♂; Bourail, February 4–6, 1963 (Gressitt; Bishop), 1♀.

NEW HEBRIDES: *Efate Island:* beach, February 23, 1964 (Straatman; Bishop), 1♀.

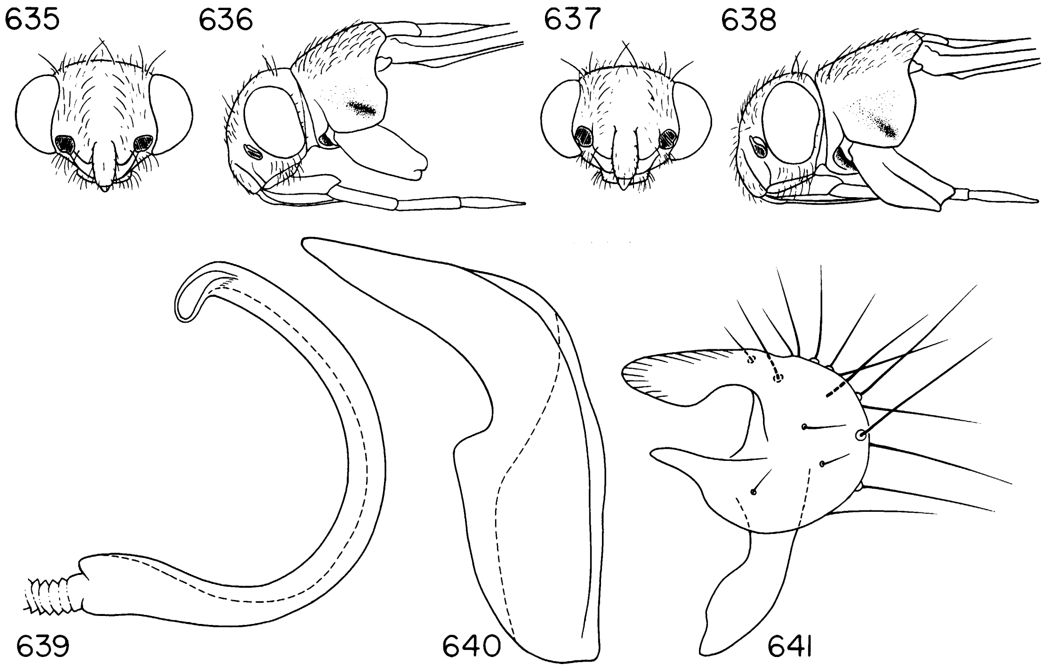
PAPUA NEW GUINEA: *New Ireland Prov.:* Mussau Island, Schadel Bay, June 3, 1962 (Noona Dan; Copenhagen), 1♂.

PHILIPPINE ISLANDS: *Negros Island:* Dumaguete Camp Lookout, February 15–April 15, 1961 (Schneirla, Reyes; AMNH), 1♀.

PITCAIRN ISLAND: South Side, 220–280 m., June 14, 1934, sweeping grasses and low herbage (Zimmerman; Bishop), 5♂♂, 5♀♀.



FIGS. 633, 634. *Tytthus chinensis.* 633. Lateral view of metathorax, showing scent-gland evaporatory area. 634. Pretarsus.



FIGS. 635–641. *Tytthus chinensis.* 635. Frontal view of head, ♂. 636. Lateral view of head and prothorax, ♂. 637. Frontal view of head, ♀. 638. Lateral view of head and prothorax, ♀. 639. Vesica. 640. Phallotheca. 641. Left paramere.

RAPA ISLAND: NW slopes of Mt. Tautautu, 220–250 m., July 9, 1934, sweeping grasses and low herbage (Zimmerman; Bishop), 2♀♀.

RYUKU ISLANDS: *Okinawa:* Nago, July 27, 1945, at light (Ray; Bishop), 1♀.

SAMOA: *American Samoa: Tutuila:* December 2, 1956, July 17, 1958 (Kellen; Bishop), 2♂♂; Aua, August 29, 1940, sweeping *Sporobolus* (Swezey; Bishop), 1♀; Blunt's Point, August 17, 1940, sweeping bermuda grass (Swezey; Bishop), 1♂, 1♀; Fagatogo, June 29, 1964 (Spencer; Bishop), 1♂, Mulinuu, December 19, 1963 (Spencer; Bishop), 1♂; Onenoa, December 12, 1956 (Kellan; Bishop), 1♀; Pago Pago, October 11, 1963 (Spencer; Bishop), 1♂; Taputimu, June 25, October 13, 1964 (Spencer; Bishop), 1♂, 2♀♀; Tula, August 16, 1953, ex beach (CAS), 1♀; Vaitogi, February 1930 (Fullaway; Bishop), 1♂, 1♀. *Western Samoa: Savaii Island:* Fanga, February 1955 (Krauss; Bishop), 1♂. *Upolu Island:* Afiamalu, 700 m., June 5, 1940, horse dung (Zimmerman; Bishop), 1♂; Apia, July 14, 1940, seashore sweeping *Cyperus* (Swezey; Bishop), 1♂, 3♀♀ Apia, 0–100 m., September 1971 (Krauss; Bishop), 1♂; February 1955 (Krauss; Bishop), 1♀.

SOCIETY ISLANDS: *Tahiti:* Fataua Valley, 1–100 m., August 17, 1969 (Krauss; Bishop), 1♂, 1♀; Papeete, December 10, 1924 (Clements; USNM), 1♀; Papeete, Blue Lagoon, March 1, 1934, at light (Zimmerman; Bishop), 1♀; Apurimaue Valley, Tiupi Bay, Papeari (Zimmerman; Bishop), 1♀. *Raiatea:* Uturoa, 0–100 m., March 1971 (Krauss; Bishop), 1♀.

SOLOMON ISLANDS: *Guadalcanal:* Kiwi Creek, July 27, 1944 (Milliron; Bishop), 1♂; Lunga River (mouth), June 27, 1944 (Milliron; Bishop), 1♀; 1.5 mi. from mouth of Metanikau River, July 2, 1944 (Milliron; Bishop), 1♀; Metanikau River, October 7, 1944 (Milliron; Bishop), 1♂, 1♀; August 1944 (Jarcho; Bishop), 1♀.

SRI LANKA: *Central Prov.:* Kandapola, 5 mi. ENE of Nuwara-Eliya, March 4, 1962, swept on moist grassland (Brinck, Andersson, Cederholm; Lund), 4♀♀; Katumana, 3 mi. SE of Nuwara-Eliya, March 21, 1962, swept around ponds (Brinck, Andersson, Cederholm; Lund), 2♂♂; Maskeliya, 5 mi. SW of Hatton, March 18, 1962, swept on grassland (Brinck, Andersson, Cederholm; Lund), 2♂♂; Mahaveli Ganga, 8 mi. WSW Nuwara-Eliya, March 18–19, 1962, at light (Brinck, Andersson, Cederholm; Lund), 1♂, 2♀♀. *Eastern Prov.:* Inginiyagala, March 8–9, 1962, at light (Brinck, Andersson, Cederholm; Lund), 1♂. *Northwest Prov.:* Puttalam, February 1, 1962, at light (Brinck, Andersson, Cederholm; Lund), 1♂. *Sabarangamuwa Prov.:* Kitugala, 21 mi. N Ratnapura, March 17, 1962, at light (Brinck, Andersson, Cederholm; Lund), 2♂♂, 1♀; Rakwana, February 27, 1962 (Brinck, Andersson, Cederholm; Lund), 1♂, 6♀♀.

SWAINS ISLAND: April 6, 1935 (Bryan; Bishop), 4♀♀.

TONGA ISLANDS: *Vavau Island:* Neiafu, 0–100 m., November 1969 (Krauss; Bishop), 1♂, 1♀; Neiafu, February 1956 (Krauss; Bishop), 1♀.

Tytthus mundulus (Breddin)

Figures 628, 629, 631, 642–644

Periscopus mundulus Breddin, 1896, p. 106.

Tytthus mundulus Carvalho and Southwood, 1955, p. 26.

DIAGNOSIS: Of those species of *Tytthus* from the Orient and the Pacific, *mundulus* can be recognized by the light first antennal segment which is sometimes infuscate or reddish distally, in combination with the dark-colored head, pronotum, and scutellum.

MALE GENITALIA: Figures 642–644.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figures 628 and 629. In addition to the localities listed below, *mundulus* is also known from Queensland, Australia.

SPECIMENS EXAMINED: FIJI: *Vanua Levu:* Savusavu, 0–100 m., March 1973 (Krauss; Bishop), 1♂. *Viti Levu:* Nausori, March 23, 1905 (Bishop), 1♂; Navua, 1906 (Muir; Bishop), 1♀. *Rewa:* November 1906 (Muir; Bishop), 1♂; Fiji (Bishop), 3♂♂, 2♀♀. HAWAII: *Hawaii:* Kipuka Puaulu, 1250 m., June 24, 1966 (Beardsley; Bishop), 1♂. *Oahu:* Lualualei, January 1959 (Bishop), 1♂; Pearl City, April 2–5, 1965 (Bishop), 1♂; Palikea, Waianae Mountains, February 3, 1935 (Swezey; Bishop), 1♀; Waialua (Swezey, Wheeler; Bishop), 5♂♂, 3♀♀. NEW CALEDONIA: Bourail, February 4–6, 1963, at light (Krauss; Bishop), 1♀. PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Arau, valley of Upper Wanton River, Kratke Mountains, 1400 m., October 12, 1959 (Brass; AMNH), 1♀. PHILIPPINE ISLANDS: *Luzon:* Los Banos, 1921 (Williams; Bishop), 1♀. *Mindanao:* Zamboanga, August 10–12, 1921 (Williams; Bishop), 1♀; Mt. Apo, Galog River, 6000 ft., September 26 (Clagg; Bishop), 1♂.

DISCUSSION: See discussion under *T. chinensis.* Introduced in Hawaii, this species is best known for its successful use in the control of the sugar cane leafhopper.

Tytthus zwaluwenbergi (Usinger)

Figures 629, 632, 645–647

Cyrtorhinus zwaluwenbergi Usinger, 1944, pp. 147–148.

Tytthus zwaluwenbergi Carvalho and Southwood, 1955, p. 19.

DIAGNOSIS: Recognized by the white to dirty yellow coloration of the entire body and all appendages.

MALE GENITALIA: Figures 645–647.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 629. Baker, Canton and Howland Islands in the central Pacific.

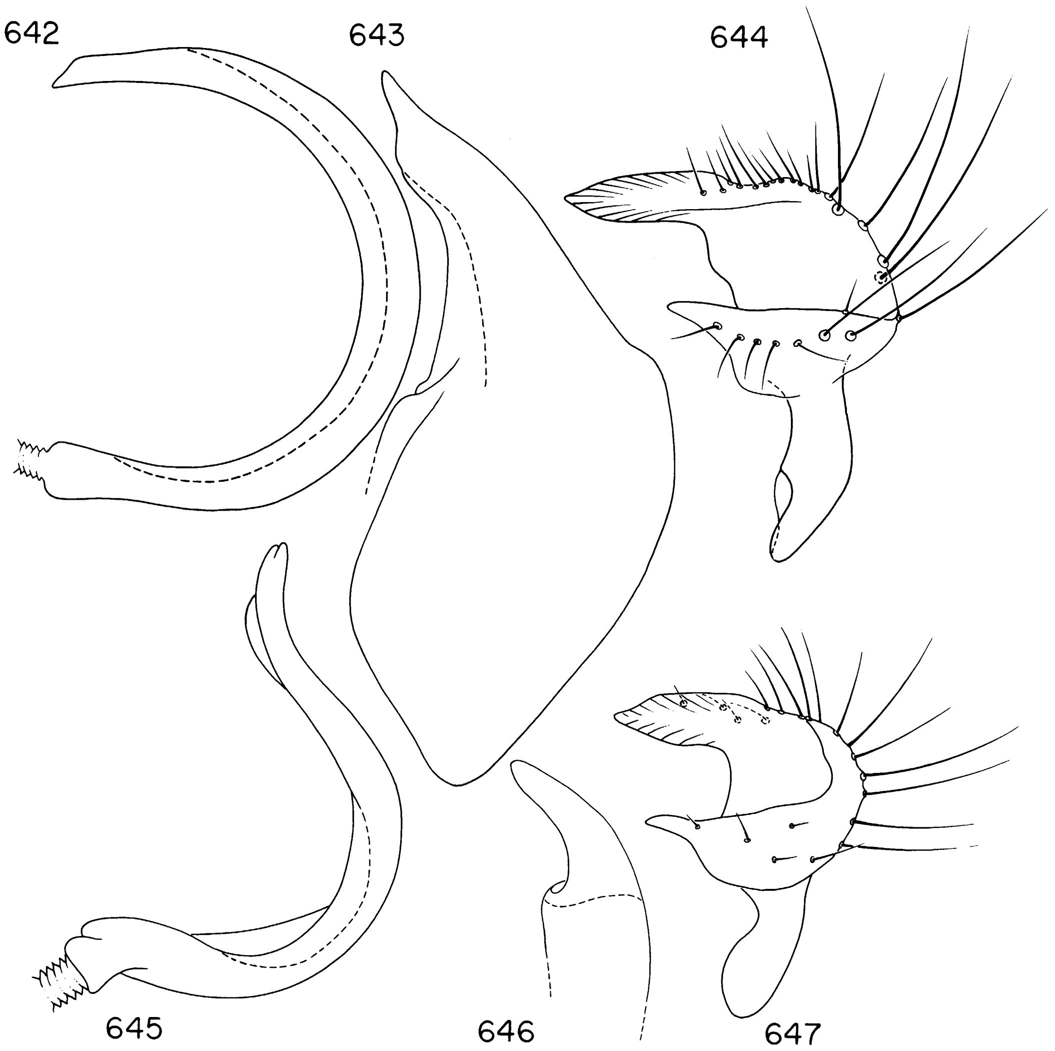
SPECIMENS EXAMINED: BAKER ISLAND: April 18, 1935, ex *Boerhaavia* sp. (Bryan; Bishop), 1♀. HOWLAND ISLAND: April 18, 1935, misc. sweeping (Bryan; Bishop), 1♂. PHOENIX ISLANDS: *Canton Island:* March 16, 1924 (Bryan; Bishop), 1♀.

DISCUSSION: *Tytthus zwaluwenbergi* is very similar in size to *chinensis,* but differs dramatically in coloration. The ratio of the length of antennal segments one and two is also somewhat different as noted by Usinger (1944).

CTYPOMIRIS GROUP

ABUYOGOCORIS, NEW GENUS

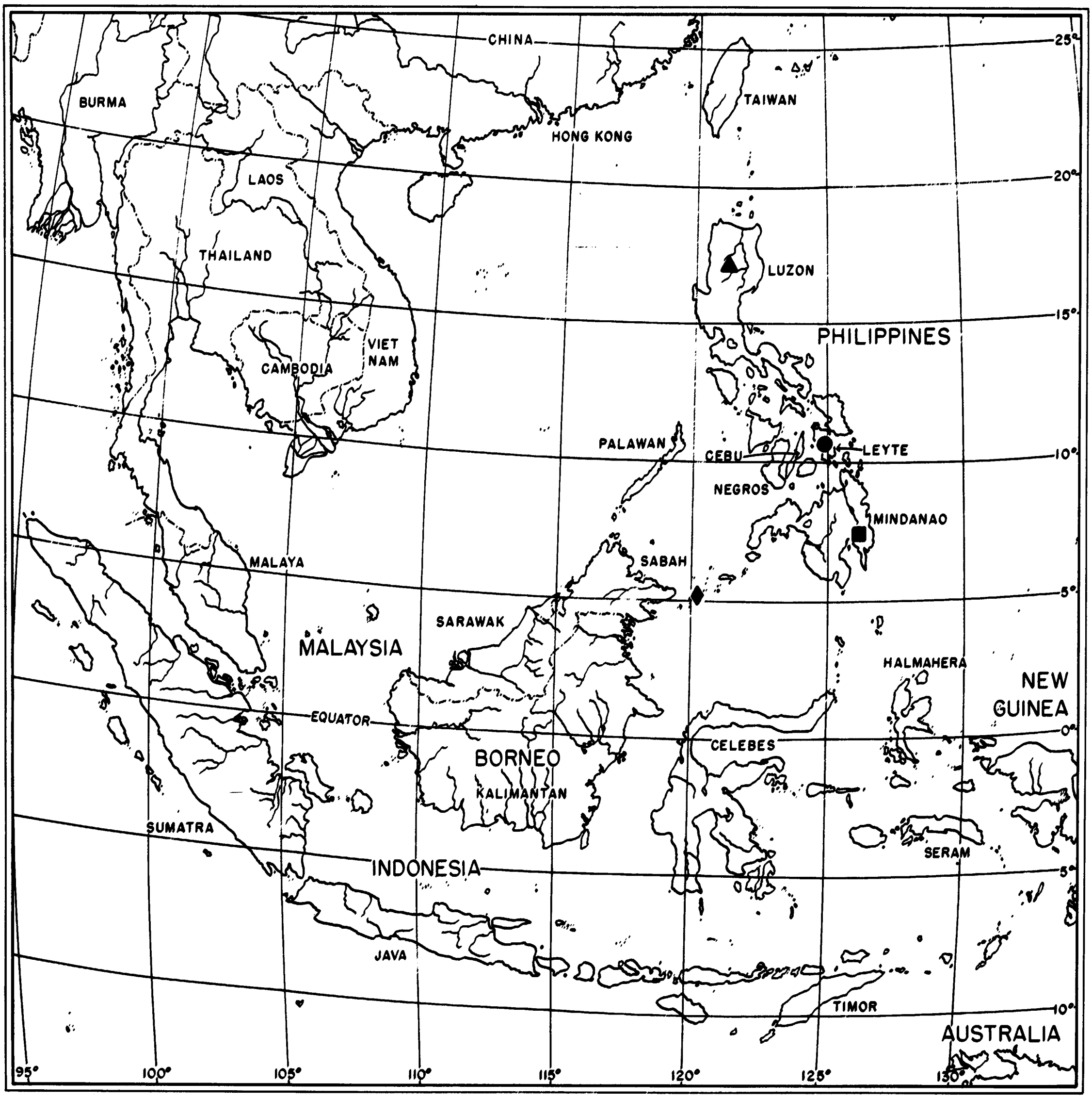
DIAGNOSIS: Recognized by the weakly antlike appearance, the highly polished dorsum with punctation on the clavus and adjacent corium, the complete, broad, light, contrasting hemelytral fascia at the level of the apex of the scutellum, the basally white cuneus, the flat, rugose scutellum, the very broad flat



FIGS. 642–647. *Tytthus* spp., male genitalia. 642–644. *T. mundulus.* 642. Vesica. 643. Phallotheca. 644. Left paramere. 645–647. *T. zwaluwenbergi.* 645. Vesica. 646. Phallotheca. 647. Left paramere.

pronotal collar encircling the entire anterior margin of the pronotum, the rectangular head with a nearly flat vertex (figs. 649, 654–656), and the form of the male genitalia (figs. 659–664).

DESCRIPTION: Macropterous male. Weakly antlike in appearance, small to medium-sized, range length apex tylus-cuneal fracture 1.43–2.53, width pronotum 0.72–1.01; general coloration golden brown to castaneous; corium and clavus with a complete, usually very well demarcated, broad, parallel-sided transverse fascia with its anterior margin at the level of the apex of the scutellum; basal one-half of cuneus ivory; membrane dark, surface dull with a bloom formed by microspicules; dorsum highly polished and shining; clavus and adjacent corium distinctly punctured; dorsum with erect and/or reclining, pale to brown, weakly shining simple setae; antennal segment one with a few erect spines on interior surface; antennal segments two, three, and four with short, often slightly shaggy vestiture; slender spine not evident on anterolateral angles of pronotum of any known specimens; eyes sometimes with interom-


CHINA
25°
BURMA
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HONG KONG
LAOS
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THAILAND
LUZON
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CAMBODIA
PALAWAN
CEBU
LEYTE
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NEGROS
MINDANAO
SABAH
MALAYA
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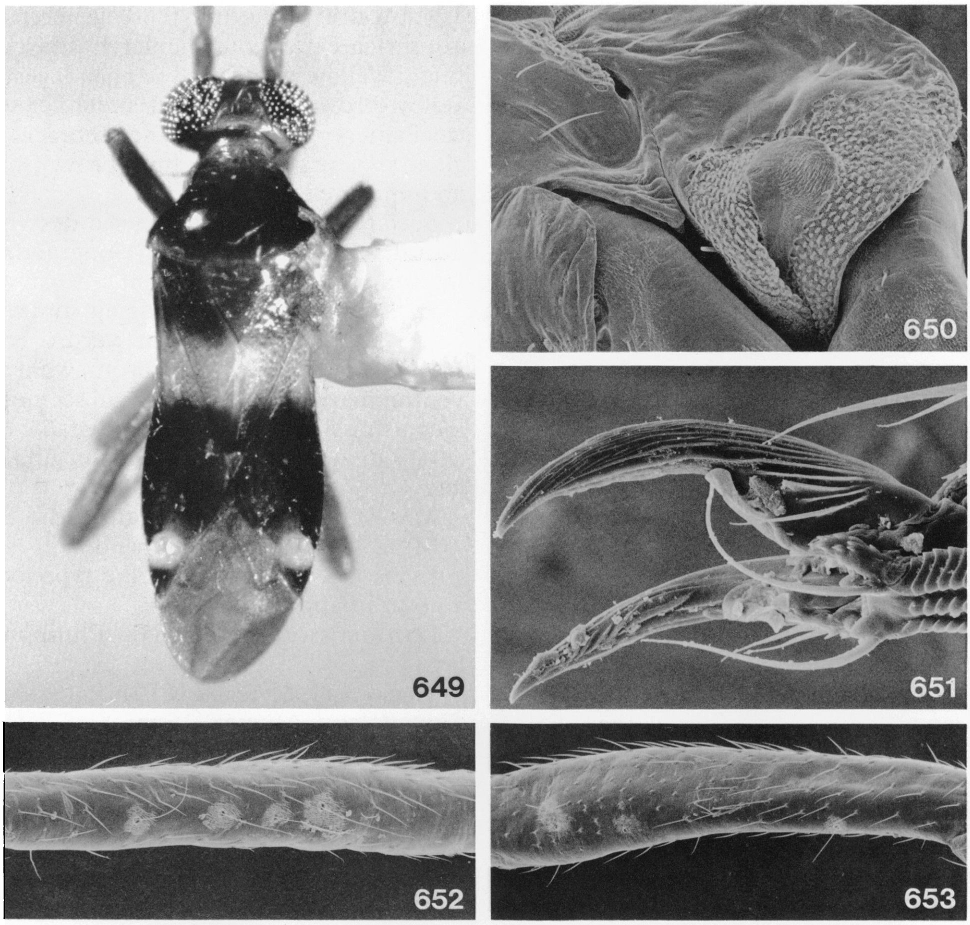
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
0°
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
5°
JAVA
TIMOR
10°
AUSTRALIA
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 648. Distribution of *Abuyogocoris* spp. *A. abuyog* (●); *A. calian* (■); *A. liwo* (▲); *A. tawitawi* (◆).

matidial setae; meso- and meta-femoral trichobothrial patterns as in figures 652 and 653; pro- and meso-tibiae usually without rows of tiny spicules, metatibiae with a few; all tibiae with reclining common setae and a few short pale suberect spines no longer than tibial diameter.

Head in dorsal view rectangular, width slightly greater than two times length; head behind weakly concave, accepting but not obscuring anterior margin of pronotum; frons usually straight across between eyes, tylus distinctly projecting; eyes usually very large, bulging, width of vertex usually less than width of an eye; vertex nearly flat longitudinally and transversely, posterior margin not elevated, posterior margin more or less even with posterior margin of eyes, sharply to rather smoothly rounded (figs. 649, 654–656); height of head in lateral view only slightly greater than height of an eye (fig. 658); antennae inserted from just below midpoint to



FIGS. 649–653. *Abuyogocoris* spp. 649. *A. abuyog,* holotype. 650–653. *A.* sp., ♂, Philippine Islands, Luzon, Mt. Montalban. 650. Lateral view of metathorax. 651. Pretarsus. 652. Mesofemur, showing trichobothria. 653. Metafemur, showing trichobothria.

just above ventral margin of eyes, eyes distinctly emarginate at antennal insertion (fig. 657); antennal fossae contiguous with eyes; antennal segment one coke-bottle-shaped, moderately elongate, segment two cylindrical, greatest diameter about equal to that of segment one, segment two not greatly elongate, length from 0.90–1.50 times width of head, segments three and four weakly terete, diameter slightly less than that of segment two; buccal cavity broadly ovate to nearly round; genae very narrow or obsolete; gula horizontal, short or obsolete (fig. 658); labium reaching to about apex of metacoxae; pronotum narrowed anteriorly, elevated and swollen posteriorly, anterior margin depressed, in the form of a flat, rugulose collar about as wide as greatest diameter of antennal segment two and encircling entire anterior margin of pronotum (figs. 649, 654–656, 658), lateral margins weakly concave, posterior margin very broadly convexly rounded and curving ventrally; mesoscutum completely obscured by posterior margin of pronotum; scutellum nearly flat, conspicuously transversely rugose, apex distinctly acuminate; hemelytra distinctly rounded in transverse section, lateral margins weakly sinuous, narrowest at level of midpoint of clavus, widest at level of apex of claval commissure, reflexed ventrally and just obscured in dorsal view on anterior two-fifths of corial margin;

cuneal fracture gently angled anteromesially, junction of corium and cuneus smooth, neither corium nor cuneus swollen, corium strongly acuminate at incisure laterally (figs. 649, 654–656), base of cuneus slightly inset and rounded laterally; large cell of membrane right-angulate or sharply rounded posteromesially; structure of scent-gland evaporatory area distinctive, as in figure 650; abdomen more or less parallel-sided, only moderately elongate, not very broadly attached to thorax, genital capsule occupying about one-third of length of abdomen; all femora elongate and slender, more or less rectangular, metafemora weakly cylindrical and curved (arched); all tibiae cylindrical; tarsal segments two and three subequal in length, segment one much shorter; tarsal claws moderately elongate, somewhat broadened basally, pulvilli small, parempodia setiform.

MALE GENITALIA: Vesica sigmoid, broadly curving basally, somewhat twisted, secondary gonopore very weakly developed, apex of vesica bluntly rounded and with a simple membranous dorsal elaboration (figs. 659, 662); phallotheca more or less L-shaped, rounded on dorsal margin, slender and weakly acuminate distally (figs. 661, 664), left paramere with a short anterior process, posterior process strongly elevated, relatively long, broad, bladelike and rather sharply acuminate, with many heavy setae (figs. 660, 663).

FEMALE: Unknown.

TYPE SPECIES: *Abuyogocoris abuyog,* new species.

ETYMOLOGY: Named for Abuyog, the type locality of the type species; masculine.

DISTRIBUTION: Figure 648. Philippine Islands.

ADDITIONAL SPECIMENS: A single male specimen is available from Mt. Montalban, Rizal Prov., Luzon, Philippine Islands (Bishop).

Abuyogocoris abuyog, new species

Figures 648, 649

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the rich castaneous dorsum with a distinct yellow-white fascia, and the dimensions (fig. 649).

DESCRIPTION: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture 1.91, width pronotum 0.80; general coloration rich castaneous, hemelytral fascia distinct, yellow-white; all appendages light yellow-brown; meso- and meta-coxae and trochanters yellow-white; metathoracic scent-gland evaporatory area light brown; base of abdomen yellow.

Surface texture as in generic description; dorsal vestiture moderately long and erect; interommatidial setae absent.

Eyes very large and bulging, ommatidia large; posterior margin of vertex broadly rounded; antennae inserted somewhat above ventral margin of eyes; antennal segment two increasing slightly in diameter distally; buccal cavity ovate; genae very narrow, gula obsolete.

MALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 648. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Leyte Island:* Abuyog, 35 mi. S of Tacloban, July 9–12, 1961, P.I. Nat. Mus. and AMNH Expedition; deposited in the American Museum of Natural History, New York.

Abuyogocoris calian, new species

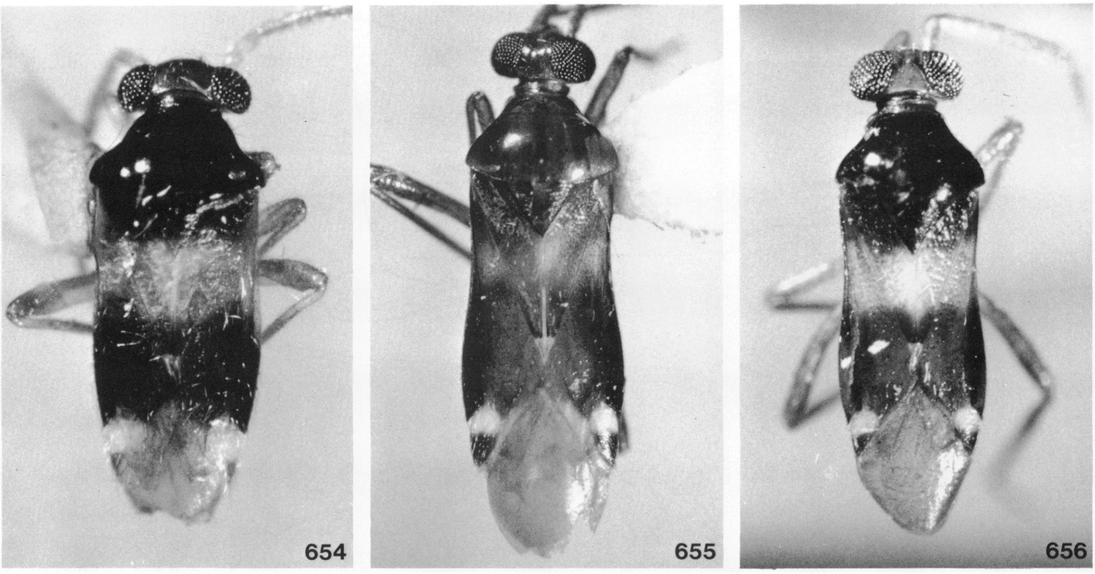
Figures 648, 654

DIAGNOSIS: Recognized by the characters in the generic diagnosis, its very small size, the rather small eyes with very long ommatidial setae, the very deep castaneous coloration, and the somewhat irregular, broad transverse hemelytral fascia (fig. 654).

DESCRIPTION: Macropterous male. Small, length apex cuneal fracture 1.45, width pronotum 0.72; general coloration deep castaneous; somewhat irregular broad hemelytral fascia, all appendages (including all coxae), and base of abdomen light brownish yellow; face below eyes, metepisternum, and posterior one-half of genital capsule light brown.

Surface texture as in generic description; interommatidial setae very long; dorsal vestiture very long and nearly erect.

Eyes only moderately large, not strongly bulging, frons weakly rounded and slightly projecting beyond anterior margin of eyes (fig.



FIGS. 654–656. *Abuyogocoris* spp. 654. *A. calian,* holotype. 655. *A. liwo,* holotype. 656. *A. tawitawi,* holotype.

654); posterior margin of vertex very sharply rounded and weakly concave between eyes; antennae inserted just above ventral margin of eyes, segment two increasing slightly in diameter distally; buccal cavity nearly round; genae slightly wider than greatest diameter of antennal segment two; gula obsolete.

MALE GENITALIA: Not examined.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 648. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Mindanao:* Davao Prov., Calian, June 13 [?], C. S. Clagg collector; deposited in the American Museum of Natural History, New York.

Abuyogocoris liwo, new species

Figures 648, 655, 659–661

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the relatively large size, and the brownish coloration with a faint transverse hemelytral fascia (fig. 655).

DESCRIPTION: Macropterous male. Relatively large, length apex tylus-cuneal fracture 2.53, width pronotum 1.01; general coloration of appendages and anterior to hemelytral fascia golden brown, castaneous posterior to fascia; transverse fascia yellow-brown, weakly contrasting with general coloration of hemelytra, irregular; metacoxae and tarsi yellowish.

Surface texture as in generic description; dorsal vestiture rubbed in only known specimen.

Eyes very large and bulging; posterior margin of vertex sharply rounded; antennae inserted just below middle of anterior margin of eyes; segment two increasing slightly in diameter distally; buccal cavity ovoid; genae very narrow; gula about as long as diameter of antennal segment two.

MALE GENITALIA: Figures 659–661.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

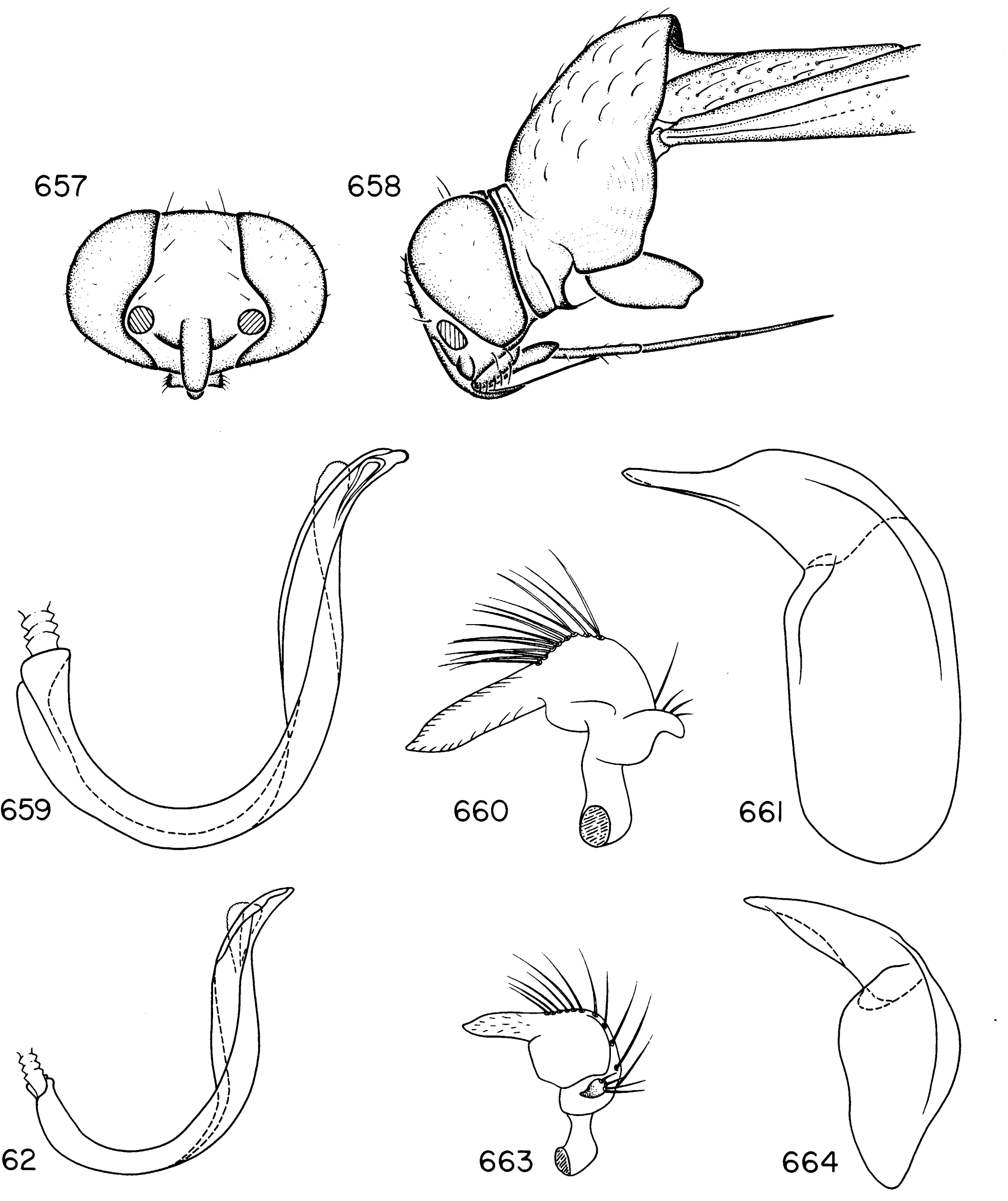
DISTRIBUTION: Figure 648. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Mountain Prov., Liwo, 8 km. NE of Mayoyao, 1000–1300 m., June 1–6, 1967, light trap, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

Abuyogocoris tawitawi, new species

Figures 648, 656, 662–664

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the moderate size,



FIGS. 657–664. *Abuyogocoris* spp. 657, 658. *A. tawitawi*. 657. Frontal view of head. 658. Lateral view of head and prothorax. 659–611. *A. liwo*. 659. Vesica. 660. Left paramere. 661. Phallotheca. 662–664. *A. tawitawi*. 662. Vesica. 663. Left paramere. 664. Phallotheca.

the large bulging eyes, the well-defined yellow-white hemelytral fascia, the yellow-brown head, the castaneous pronotum and hemelytra (fig. 656), and the form of the male genitalia (figs. 662–664).

DESCRIPTION: Macropterous male. Moderate sized, length apex tylus-cuneal fracture 1.93, width pronotum 0.79; head, pronotal collar, and appendages generally golden brown; pronotal disk and hemelytra deep castaneous; hemelytral fascia yellow-white, well defined.

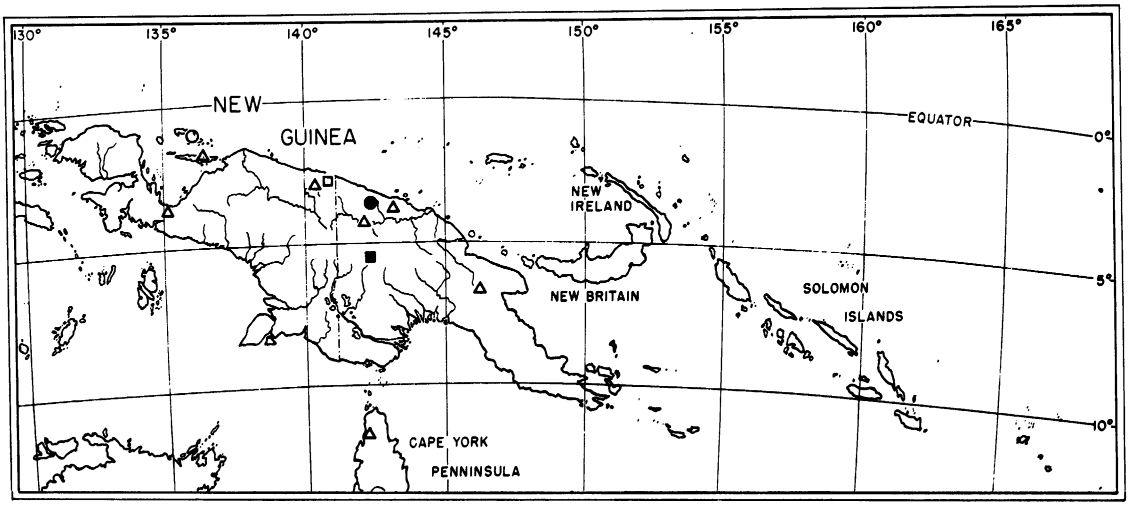


FIG. 665. Distribution of *Arafuramiris* spp. *A. biakanus* (○); *A. dreikikir* (●); *A. gressitti* (□); *A. jimmi* (■); unidentified specimens (△).

Surface texture as in generic description; dorsal vestiture rubbed in only known specimen.

Eyes very large and bulging; posterior margin of vertex rather broadly rounded, antennae inserted somewhat below middle of anterior margin of eyes, segment two increasing slightly in diameter distally; buccal cavity broadly ovoid; genae about as wide as tibial diameter; gula about as long as diameter of antennal segment two.

MALE GENITALIA: Figures 662–664.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 648. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Tawitawi Group:* Lapid Lapid at Manalik Channel, November 19, 1961, at MV light 1900–0200, Noona Dan Expedition; deposited in the University Zoological Museum, Copenhagen.

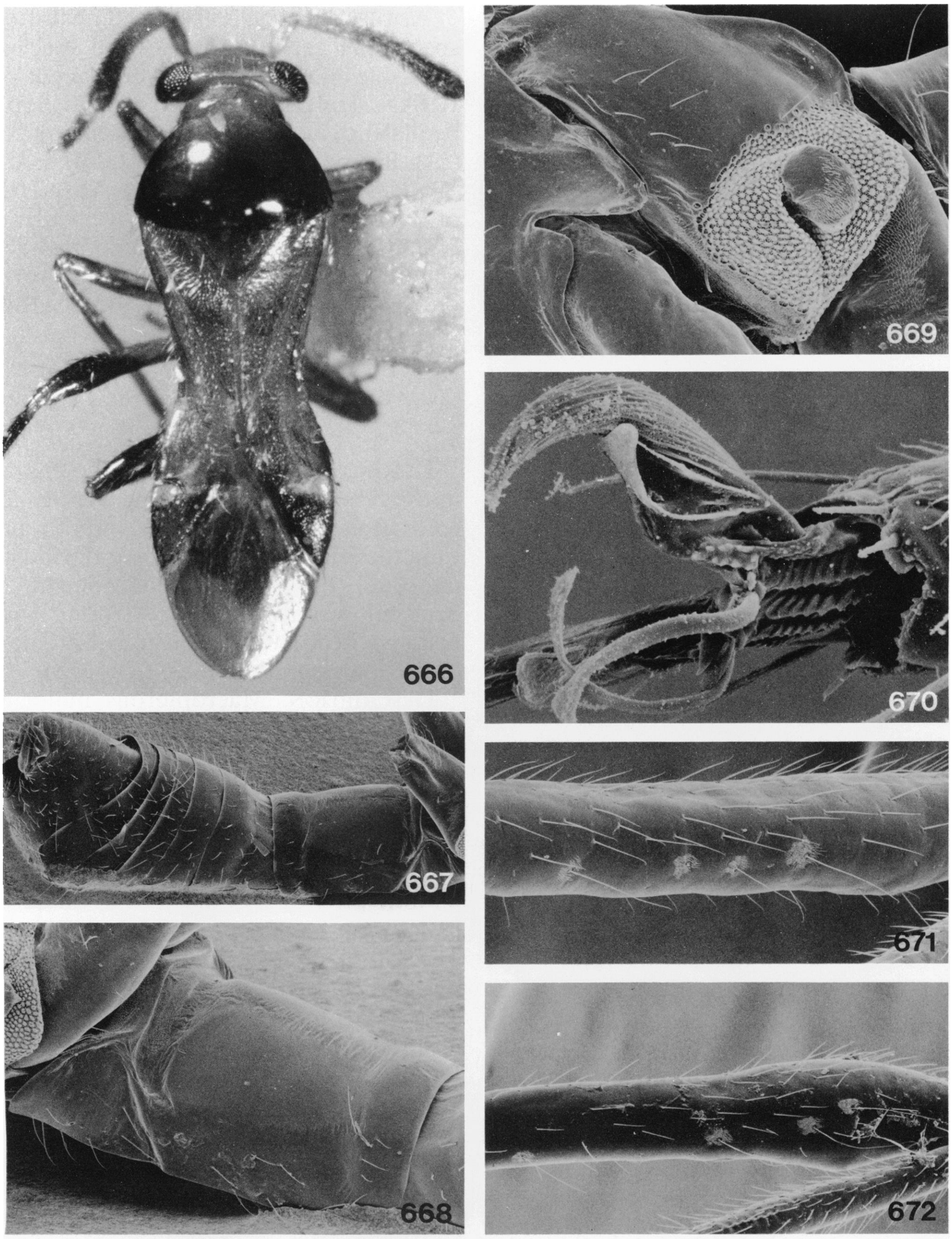
ARAFURAMIRIS, NEW GENUS

DIAGNOSIS: Recognized by the nearly parallel-sided anterior pronotal lobe, the flattened pronotal collar completely encircling the pronotum, the head, posterior lobe of the pronotum, and scutellum highly polished and very smooth, the pronotum completely obscuring the mesoscutum, the hemelytra strongly constricted mesially with the anterior margin strongly reflexed ventrally and the costa not visible in dorsal view, the corium and cuneus swollen adjacent to the cuneal fracture, the hemelytra covered with erect simple setae and tiny appressed shining setae augmenting the hemelytral color pattern (figs. 666, 673–675, 679–681), and the petiolate abdomen with the first complete abdominal sternite distinctly longer than wide (figs. 667, 668) and with a striated area visible with scanning electron microscopy (fig. 668), and by the form of the male genitalia (figs. 676–678).

DESCRIPTION: Macropterous male. Habitus antlike, small to moderately large, range length apex tylus-cuneal fracture 1.45–2.53, range width pronotum 0.72–1.01; general coloration from golden brown to mahogany or castaneous; clavi with a flaring band of white scalelike setae just posterior to scutellum (figs. 666, 679–681), exocorium transparent just posterior to mesial constriction, corium with a small rounded white spot at apex of clavus (covered with tiny white scalelike setae); cuneus adjacent to cuneal fracture white, strongly contrasting; head, pronotum, and all femoral highly polished and shining; hemelytra weakly punctate, dull; membrane with a weak, dull, bloom formed by microspicules; dorsum with scattered, long, suberect pale simple setae; corium, clavus, and cuneus (except basally) densely covered with flattened, appressed, tiny, shining setae (figs. 674, 675); eyes with distinct interommatidial setae; antennal segment one with a few, fine, erect, pale spines on interior surface; antennal segments two, three, and four with short, recumbent vestiture; erect fine spine present on anterolateral angles of pronotum in some specimens; meso- and meta-femoral trichobothrial patterns as in figures 671 and 672; all tibiae conspicuously covered with reclining pale setae about as long as tibial diameter and intermixed with some slightly more erect pale spines on similar length; pro- and meso-tibiae with a row of tiny black spicules on dorsal and ventral surfaces, metatibiae with several rows.

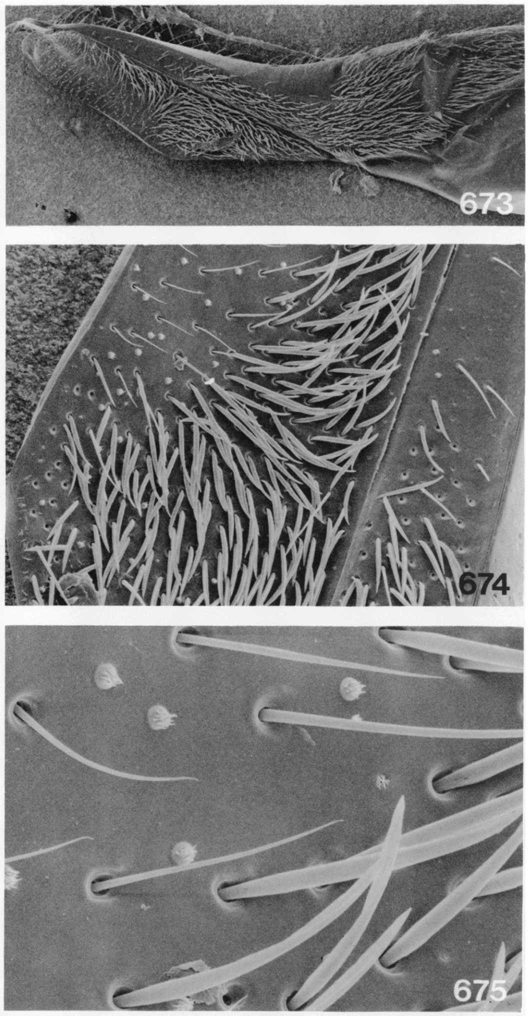
Head transverse in dorsal view, posterior margin nearly straight or weakly curving, head behind weakly concave, not obscuring anterior pronotal margin; vertex moderately to strongly inclined, posterior margin erect or nearly so, carinate or sharply rounded, straight or weakly concave between eyes (figs. 666, 679–681); eyes often large and vertex relatively narrow (figs. 679–681), vertex sometimes broad (fig. 666), eyes always conspicuously projecting laterally beyond anterolateral angles of pronotum; anterior margin of head either straight across in dorsal view and frons flat, or frons rounded and distinctly projecting beyond anterior margin of eyes; eyes in lateral view occupying nearly entire height of head (figs. 683, 685); antennae inserted about one-third distance above ventral margin of eye, eye rather strongly emarginate at antennal insertion, antennal fossae slightly removed from margin of eyes (figs. 682, 684); antennal segment one coke-bottle-shaped, length ranging from distinctly less than to slightly greater than width of vertex; antennal segment two not greatly elongate, length ranging from slightly greater than to about 1.30 times width of head, cylindrical, of nearly uniform diameter over entire length, greatest diameter slightly greater than that of segment one, always distinctly curving, segments three and four subequal in diameter, about one-half diameter of segment two; buccal cavity short and broad, nearly round; width of genae from obsolete to diameter of antennal segment two; face below eyes and behind lora sometimes in the form of a low, rounded ridge (figs. 683, 685); gula obsolete to short and steeply inclined; labium reaching to between pro- and meso-coxae; pronotum with anterior margin in the form of a depressed, flat collar, about as wide as tibial diameter, encircling entire pronotum (as in fig. 696), anterior lobe weakly constricted, short, more or less parallel-sided, posterior lobe swollen, elevated, tumidiform, lateral margins broadly rounded, posterior margin decurved and from nearly straight to very broadly rounded; mesoscutum completely obscured by pronotum; scutellum rather steeply declining posteriorly, weakly swollen, apex flat; hemelytra flat, lateral margins strongly sinuous, reflexed ventrally on anterior one-half of corium and obscured in dorsal view (figs. 666, 679–681); clavus weakly elevated along commissure; corium and cuneus swollen adjacent to cuneal fracture, fracture weakly troughlike, incisure weakly angled anteromesially, cuneal incisure obsolete (figs. 666, 679–681); large cell of membrane angulate or sharply rounded posteriorly; anterior evaporatory area of metathoracic scent gland largely overlapping posterior portion, as in figure 669; abdomen strongly narrowed basally, first complete sternite longer than broad, about two times length of segment two (figs. 667, 668), and with distinct striated areas (most easily visible with scanning electron microscope [fig. 668]); abdomen flaring and broadened beginning with posterior portion of second complete sternite; genital capsule occupying about one-fifth of length of abdomen; all femora elongate, slender, more or less cylindrical, metafemora distinctly curving in dorsal perspective, weakly sinuous in lateral view, and swollen distally (fig. 672); pro- and meso-tibiae cylindrical, metatibiae sometimes weakly flattened, bent, or tapering distally; metatarsal segments two and three subequal in length, segment one much shorter; claws rather strongly bent, broad basally, pulvilli distinct, paremopodia setiform or weakly fleshy, sharply bent and convergent apically (fig. 20).

MALE GENITALIA: Vesica moderately long, strongly sigmoid, weakly twisted, secondary gonopore subapical, moderately developed



FIGS. 666–672. *Arafuramiris* spp. 666. *A. biakanus,* holotype. 667–669. *A.* sp., ♂, Australia, Northern Queensland, Wenlock. 667. Ventrolateral view of abdomen. 668. Detail of first abdominal sternite, showing possible stridule mesolaterally. 669. Lateral view of metathorax. 670–672. *A.* sp., ♀. Indonesia, West Irian, Hollandia-Binnen. 670. Pretarsus. 671. Mesofemur, showing trichobothria. 672. Metafemur, showing trichobothria.

and sclerotized, vesica without spines or processes distad of gonopore (fig. 676); phallotheca strongly L-shaped, acuminate apically (fig. 678); left paramere short and stocky, pos-



FIGS. 673–675. *Arafuramiris* sp., ♂, Australia, Northern Queensland, Wenlock. 673. Hemelytron. 674. Detail of hemelytron at level of anterior and of claval commissure. 675. Detail of clavus along commissure showing tufts of tiny spicules.

terior process somewhat elevated, both processes of moderate length (fig. 677).

FEMALE: See *Arafuramiris biakanus.*

FEMALE GENITALIA: Posterior wall simple.

TYPE SPECIES: *Arafuramiris biakanus,* new species.

ETYMOLOGY: Named for the Arafura Sea; masculine.

DISTRIBUTION: Figure 665. New Guinea and northern Australia.

ADDITIONAL SPECIMENS: The following specimens, representing several species, are available but have not been described: WEST IRIAN: Hollandia-Binnen (1♀, Bishop); Japen Island, Dawai River (1♀, Bishop); Nabire (2♂♂, Bishop). PAPUA NEW GUINEA: *East Sepik Prov.:* Ambunti (1♂, 1♀, AMNH); Maprik (1♂, Bishop). *Morobe Prov.:* Nadzab (1♂, USNM). Also three male and two female specimens are available from northern Queensland, Australia (AMNH, Bishop, BMNH, USNM).

Arafuramiris biakanus, new species

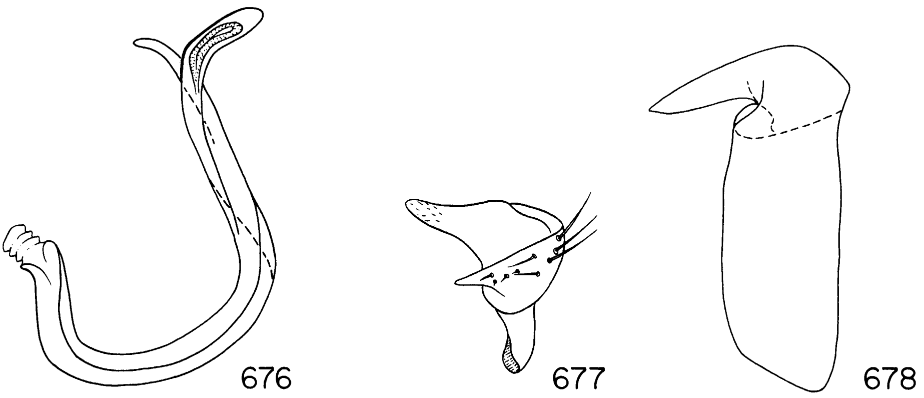
Figures 665, 666, 676–678

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the generally golden coloration, the completely smooth pronotum, the relatively small eyes and wide vertex (fig. 666), the relatively great height of the head below the eyes (about one-fourth of total height of head), the dimensions, and the form of the male genitalia (figs. 676–678).

DESCRIPTION: Macropterous male. Moderately small, length apex tylus-cuneal fracture 1.82, width pronotum 0.84; head, pronotum anteriorly, corium and clavus, most of thorax ventrally, base of abdomen, antennae (except segment two on distal one-half), prolegs, meso- and meta-coxae, meso- and meta-femora proximally, meso- and meta-tibiae distally and meso- and meta-tarsi golden; posterior lobe of pronotum, scutellum, cuneus posteriorly, distal one-half of antennal segment two, mesepisternum, abdomen posteriorly, meso- and meta-femora distally, and meso- and meta-tibiae proximally, castaneous; membrane smoky.

Surface texture and vestiture as in generic description, except entire pronotum smooth and shining.

Posterior margin of head weakly curving in dorsal view, posterior margin of vertex carinate, straight across between eyes, vertex moderately declining anteriorly (fig. 666); eyes relatively small, occupying about three-fourths of total height of head, vertex relatively broad; frons distinctly projecting beyond eyes in dorsal view, smoothly rounded; length of antennal segment two about two times interocular space; genae about as wide as diameter of antennal segment two; gula



FIGS. 676–678. *Arafuramiris biakanus*. 676. Vesica. 677. Left paramere. 678. Phallotheca.

obsolete; anterior lobe of pronotum short, posterior margin of pronotum weakly convex; metatibiae cylindrical, tapering distally, slightly bent.

Male Genitalia: Figures 676–678.

Female: Submacropterous. Coloration, surface texture, and vestiture as in male; eyes somewhat smaller than in male, vertex relatively wider, posterior margin shallowly concave, obscuring most of anterior margin of pronotum; genae distinctly bulging; antennal segment two narrow basally, increasing in diameter distally; pronotum inflated but highest elevation at about midpoint of longitudinal axis, posterior lobe not so conspicuously broadened relative to anterior as in male; hemelytra not so elongate as in male, more or less conforming to and just covering abdomen; abdomen distinctly petiolate.

Female Genitalia: Not examined.

Measurements: See Appendix.

Etymology: Named for Biak Island.

Distribution: Figure 665. Western New Guinea.

Holotype ♂: INDONESIA: *West Irian:* Biak Island, strand, June 24, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype (AMNH, Bishop), 2♂♂, 1♀.

Arafuramiris dreikikir, new species

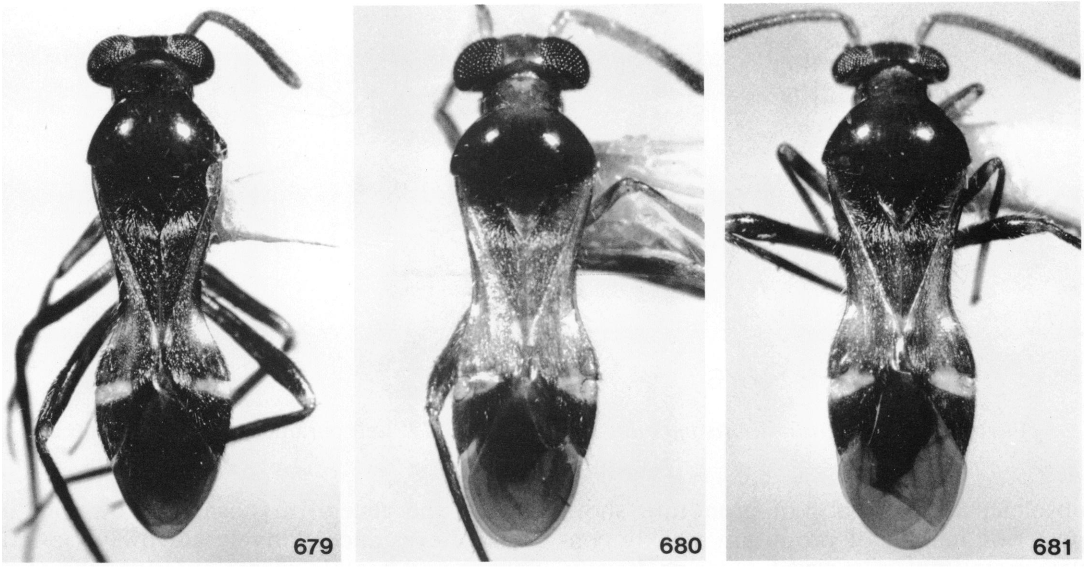
Figures 665, 679, 682, 683

Diagnosis: Recognized by the characters in the generic diagnosis, its relatively large size, the general mahogany coloration, the large eyes and relatively narrow vertex, the long and heavily rugose anterior lobe of the pronotum (fig. 679), and the dimensions.

Description: Macropterous male. Large, length apex tylus-cuneal fracture 2.67, width pronotum 1.08; basic coloration mahogany; posterior two-thirds of cuneus, meso- and meta-thorax laterally and ventrally, and tibiae generally castaneous; posterior one-third of first complete abdominal sternite, antennal segment one, extreme distal portion of pro- and meso-tibiae, and all tarsi yellowish; membrane very dark.

Surface texture and vestiture generally as in generic description but anterior lobe of pronotum heavily rugose.

Eyes more or less quadrate in dorsal view, large; vertex relatively narrow, posterior margin very sharply rounded, nearly straight across and slightly recessed from posteromesial angle of eye; posterior margin of eyes obliquely angulate in dorsal view, head weakly conforming to shape of anterior margin of pronotum and (probably) partially obscuring it; frons straight across and not projecting beyond anterior margin of eyes in dorsal view (fig. 679); genae about as wide as tibial diameter; gula about as long as tibial diameter, vertical; length of antennal segment two 5.40 times interocular space; antennal segments three and four missing in holotype; anterior lobe of pronotum about two-thirds length of posterior lobe, posterior margin of pronotum nearly straight across; scutellum relatively large; metatibiae very weakly flattened, in-



FIGS. 679–681. *Arafuramiris* spp. 679. *A. dreikikir,* holotype. 680. *A. gressitti,* holotype. 681. *A. jimmi,* holotype.

creasing in diameter distally, and slightly curved.

MALE GENITALIA: Not examined.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Name for the type locality; a noun in apposition.

DISTRIBUTION: Figure 665. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *East Sepik Prov.:* Dreikikir, 300–400 m., June 22, 1961, light trap, J. L. and M. Gressitt collectors; deposited in the B. P. Bishop Museum, Honolulu.

Arafuramiris gressitti, new species
Figures 665, 680, 684, 685

DIAGNOSIS: Recognized by the characters in the generic description, the relatively small size, the generally golden coloration, the relatively large eyes, narrow vertex (fig. 680), the eyes occupying the entire height of the head (fig. 684), and the dimensions.

DESCRIPTION: Macropterous male. Moderately small, length apex tylus-cuneal fracture 1.87, width pronotum 0.79; general coloration golden, posterior lobe of pronotum largely mahogany, posterior two-thirds of cuneus, distal one-third of antennal segment two, metatibiae, and posterior one-half of abdomen castaneous; membrane yellowish at extreme base, very dark between and just posterior to cunei, and with a broad weakly whitish border posteriorly.

Surface texture and vestiture as in generic description, except entire anterior lobe of pronotum vaguely rugose mesially.

Posterior margin of head obliquely angulate, roughly conforming to shape of, but not completely obscuring, anterior margin of pronotum; vertex somewhat depressed, posterior margin sharply rounded, weakly concave; eyes large, width of an eye greater than width of vertex (fig. 680), in lateral view occupying nearly entire height of head (fig. 685); length of antennal segment two 4.40 times interocular space; genae and gula obsolete; anterior lobe of pronotum about one-half length of posterior lobe, posterior margin of posterior lobe broadly rounded; metafemora increasing in diameter distally, somewhat bent.

MALE GENITALIA: Not examined.

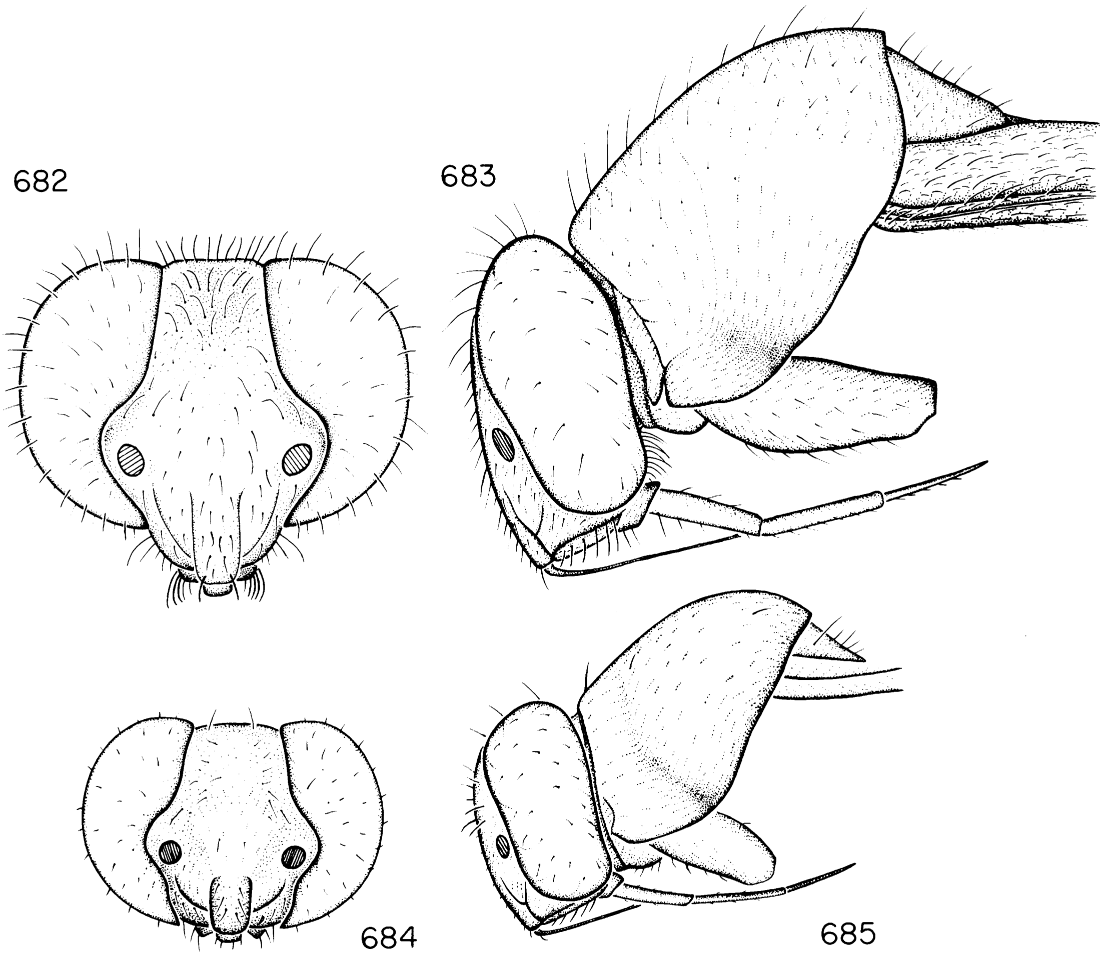
FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for J. L. Gressitt.

DISTRIBUTION: Figure 665. Western New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:*



FIGS. 682–685. *Arafuramiris* spp. 682, 683. *A. dreikikir.* 682. Frontal view of head, ♂. 683. Lateral view of head and prothorax, ♂. 684, 685. *A. gressitti.* 684. Frontal view of head, ♂. 685. Lateral view of head and prothorax, ♂.

Hollandia Binnen, 100 m., November 24, 1958, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

Arafuramiris jimmi, new species
Figures 665, 681

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the relatively large size, the mahogany to castaneous coloration, the relatively short and weakly rugose anterior pronotal lobe (fig. 681), and the dimensions.

DESCRIPTION: Macropterous male. Large, length apex tylus-cuneal fracture 2.36, width pronotum 1.05; coloration mahogany to castaneous; antennal segment one ventrolaterally, tibiae distally, tarsi, and abdomen basally lighter; membrane dark between cunei, somewhat lighter posteriorly.

Surface texture and vestiture as in generic description, anterior pronotal lobe weakly rugose.

Eyes more or less transverse, anterior margins broadly rounded, posterior margins obliquely angulate; vertex relatively broad, width about equal to that of an eye, posterior margin straight across between eyes and sharply rounded; posterior margin of head roughly conforming to shape of anterior margin of pronotum, but not obscuring it (fig.

681); in lateral view eyes occupying nearly entire height of head; genae about as wide as tibial diameter, gula obsolete; length of antennal segment two 4.00 times interocular space; anterior lobe of pronotum about one-half length of posterior lobe; posterior margin of pronotum straight across mesoscutum, broadly rounded laterally; metatibiae weakly flattened, distinctly tapering distally, distinctly bent.

MALE GENITALIA: Not examined.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the Jimmi River; a noun in apposition.

DISTRIBUTION: Figure 665. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Western Highlands Prov.:* Korop, Upper Jimmi River Valley, 1300 m., July 12, 1955, light trap, collected by J. L. Gressitt; deposited in the B. P. Bishop Museum, Honolulu.

BIROMIRIS, NEW GENUS

DIAGNOSIS: Recognized by the collar-like anterior margin of the pronotum, the highly polished head, pronotum, and scutellum, the swelling of the corium and cuneus adjacent to the cuneal fracture, the impunctate hemelytra with weakly to strongly lanceolate, erect dark setae (figs. 687–689, 698), the anterolateral margins of the pronotum weakly to strongly carinate (fig. 688), the completely obscured mesoscutum, the broad tumidiform pronotum (fig. 691), the ivory, earlike projection on the posterodorsal margin of the metepisternum, the pattern of coloration, and the form of the male genitalia (figs. 692–694).

DESCRIPTION: Macropterous male. Vaguely antlike, more or less parallel-sided, from rather short and broad-bodied to relatively elongate, range length apex tylus-cuneal fracture 1.80–2.55, range width pronotum 0.81–1.19; general coloration castaneous to red brown, hemelytra often somewhat lighter; anterior one-third of corium (except base) and exocorium at level of apex of clavus transparent; corium at level of apex of clavus with a small, more or less well-developed rounded white spot; cuneus white basally; posterodorsal margin of metepisternum with a small, distinct, ivory marking; head, pronotum, scutellum, thoracic venter, abdomen, and all femora highly polished and shining; hemelytra generally smooth, always impunctate, dull, corium and clavus occasionally with some pruinosity; dorsum with scattered, suberect, simple setae of moderate length, and weakly to strongly lanceolate erect black setae on corium and clavus (figs. 687, 698); corium and clavus also with some appressed golden shining setae of variable length; eyes with distinct interommatidial setae; antennal segment one with a few erect fine spines on interior surface, antennal segments two, three, and four with short to weakly elongate, slightly shaggy vestiture; erect fine spine not evident on anterolateral angles of pronotum of any available specimen; all tibiae with reclining common setae; pro- and meso-femora always and metafemora often with some suberect pale or dark spines about as long as tibial diameter; pro- and meso-tibiae with a single row of tiny black spicules on dorsal and ventral surface, metafemora with several rows.

Head transverse in dorsal view, strongly flattened anteroposteriorly, weakly to moderately concave behind, slightly to largely obscuring anterior margin of pronotum, eyes distinctly projecting laterally beyond anterolateral angles of pronotum; vertex nearly vertical, confluent with frons, posterior margin erect, carinate or sharply rounded, nearly straight to distinctly concave between eyes (figs. 687–689); eyes in lateral view occupying about two-thirds of height of head (fig. 691); antennal insertion at or just above ventral margin of eyes, anterior margin of eye weakly to moderately emarginate above antennal insertion, antennal fossae not contiguous with eyes (fig. 690); antennal segment one coke-bottle-shaped, relatively short, length approximately equal to, or less than, interocular space, segment two relatively short and stout, length about equal to width of head, increasing slightly in diameter distally, greatest diameter slightly greater than that of segment one, segments three and four weakly terete, distinctly thickened, subequal in diameter, about equal to diameter of segment one; buccal cavity very broad anteriorly, tapering posteriorly, gula very short, with a transverse roll ("double chin") (fig. 691); genae about one and one-half times as wide as diameter of

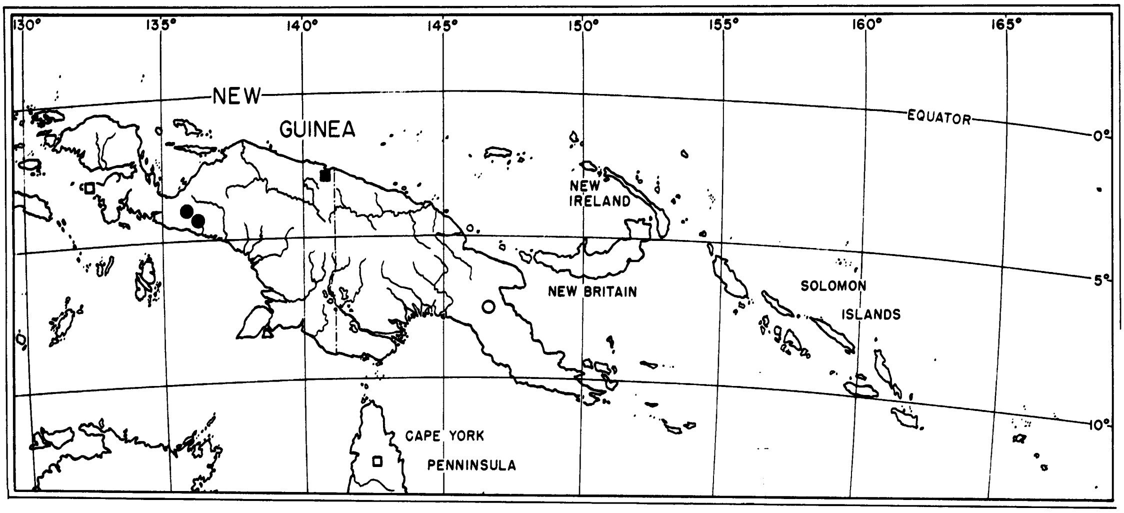


FIG. 686. Distribution of *Biromiris* spp. *B. bulolo* (○); *B. cyclops* (■); *B. enarotadi* (●); unidentified specimens (□).

antennal segment one, with a low, rounded ridge running dorsoventrally just behind the lora (fig. 691); labium reaching to apex of metacoxae; pronotum with a well-developed, flattened, rugose collar, encircling entire pronotum, distinctly depressed and about as wide as tibial diameter dorsally (figs. 691, 696); pronotum subtumidiform, not strongly narrowed anteriorly, lateral margins nearly straight, at least anteriorly weakly carinate, sometimes strongly so over nearly entire margin, posterior margin decurved, broadly convexly rounded; mesoscutum completely obscured by posterior pronotal margin; pronotum weakly swollen to tumid, apex always flattened; hemelytra nearly flat, at most weakly sloping laterally, corial margins weakly sinuous, narrowest at about midpoint of claval commissure, costa sometimes weakly reflexed ventrally on anterior one-third, always partially visible from above, corium and cuneus swollen adjacent to cuneal fracture, fracture troughlike, cuneal incisure of variable depth; large cell of membrane smoothly rounded posterolaterally; metathoracic scent gland opening weakly elevated dorsally (laterally), anterior evaporatory area largely overlapping posterior area (fig. 695); abdomen elongate and slender, parallel-sided, narrowly attached to thorax, first complete abdominal sternite as long as wide and distinctly longer than segment two (fig. 697); genital capsule occupying from one-fourth to one-sixth of total length of abdomen; all femora more or less elongate and slender, either rectangular or weakly cylindrical in form, metafemora always distinctly curving; metatarsal segments two and three subequal in length, segment one somewhat shorter; pro- and meso-tibiae cylindrical, metatibiae either cylindrical or weakly but noticeably flattened; claws elongate, smoothly curving, somewhat broadened basally, pulvilli small, parempodia setiform, sharply bent and convergent apically.

MALE GENITALIA: Vesica only relatively short, sigmoid, slightly twisted, secondary gonopore at most weakly developed, vesica without apical spines or processes (fig. 692); phallotheca L-shaped, elongate and acuminate apically (fig. 694); left paramere short and stocky, posterior process distinctly elevated, rather broad and blunt (fig. 693).

FEMALE: See *Biromiris cyclops*.

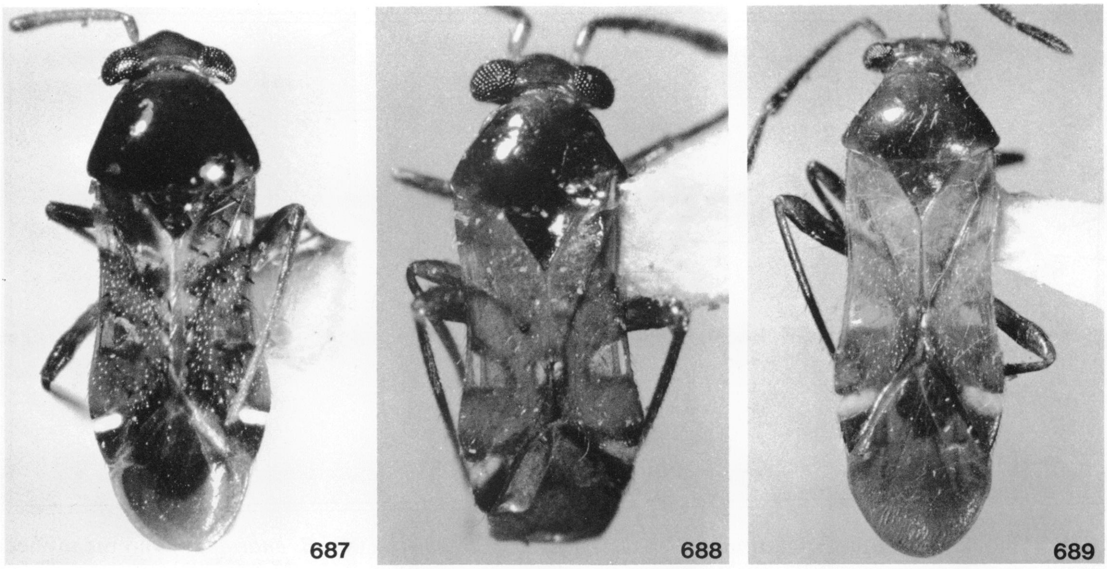
FEMALE GENITALIA: Not examined.

TYPE SPECIES: *Biromiris enarotadi,* new species

ETYMOLOGY: Named for L. Biro, early Hungarian collector of Hemiptera in New Guinea and other areas in the Indo-Pacific; masculine.

DISTRIBUTION: Figure 686. New Guinea and northern Australia.

ADDITIONAL SPECIMENS: A single female



FIGS. 687–689. *Biromiris* spp. 687. *B. bulolo,* holotype. 688. *B. cyclops,* holotype. 689. *B. enarotadi,* holotype.

(Bishop) is available from Fak Fak, West Irian. Four female specimens are available from northern Queensland (Bishop, BMNH).

Biromiris bulolo, new species

Figures 686, 687

DIAGNOSIS: Recognized by the characters given in the generic diagnosis, the distinctly concave posterior margin of the vertex, the tumidiform scutellum, the jet-black, erect, conspicuously lanceolate setae on the hemelytra (fig. 687), and the dimensions.

DESCRIPTION: Macropterous male. Body form relatively stout, length apex tylus-cuneal fracture 2.01, width pronotum 0.94; general coloration of head, pronotum, scutellum, posterior portion of cuneus, and venter mahogany to castaneous, femora somewhat lighter proximally and tibiae lighter distally; antennae light brown, except extreme distal portion of segment two castaneous (segments three and four missing in only known specimen); clavus and corium generally golden brown or rust brown, clavus lighter at level of apex of scutellum and near apex, corium distinctly orange on swollen costal area adjacent to cuneus; clavus at level of apex of scutellum and corium around posterior transparent area weakly pruinose; membrane very dark smoky, weakly shining anteriorly, with a dull white bloom around posterior margin.

Surface texture as in generic description, with hemelytral pruinosity as indicated above; head, pronotum, and scutellum with erect simple setae; corium and clavus with scattered, erect, jet-black lanceolate setae and scattered (fig. 687; see also fig. 698), very small, golden shining appressed setae, metatibiae without spines.

Head moderately concave behind, posterior margin more or less conforming to and partially obscuring anterior margin of pronotum; posterior margin of vertex distinctly concave; antennae inserted just above ventral margin of eyes, eyes moderately emarginate above antennal insertion; length of antennal segment one distinctly less than interocular space; gula short, with a weak transverse roll; pronotum weakly carinate anterolaterally; scutellum tumidiform; costa reflexed ventrally on extreme anterior portion, costa visible from above; cuneal incisure very shallow; metatibiae at most very weakly flattened.

MALE GENITALIA: Not examined.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 686. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Morobe Prov.:* Bulolo, 282 m., August 13, 1956, E. J. Ford, Jr. collector; deposited in the B. P. Bishop Museum, Honolulu.

Biromiris cyclops, new species

Figures 686, 688

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the straight posterior margin of the vertex, the very weakly elevated scutellum, and the at most weakly lanceolate erect setae on the hemelytra (fig. 688); separated from *enarotadi* by its much smaller size.

DESCRIPTION: Macropterous male. Body form relatively stout, length apex tylus-cuneal fracture 1.80, width pronotum 0.81; general coloration of pronotum, scutellum, abdomen, cuneus posteriorly, and appendages mahogany to weak castaneous, tibiae distally and tarsi lighter; head and thorax ventrally golden brown; corium and clavus generally golden yellow-brown; membrane very dark.

Surface texture as in generic description; hemelytra without pruinosity; hemelytral vestiture with suberect, rather long, simple, pale setae and some relatively long, appressed, weakly shining setae; metatibiae with with some suberect pale spines.

Head weakly concave behind, nearly straight across, not conforming to and not obscuring anterior margin of pronotum; posterior margin of vertex straight across between eyes (fig. 688); antenna inserted at ventral margin of eyes, eyes moderately emarginate above antennal insertion; antennal segment one about as long as interocular space; transverse gular roll distinct; lateral margin of pronotum with a distinct rounded carina anteriorly; scutellum very weakly swollen; anterior corial margin not reflexed ventrally; cuneal incisure in the form of a deep notch; metatibiae slightly flattened.

MALE GENITALIA: Not examined.

FEMALE: Submacropterous. Coloration, surface texture, and vestiture as in male; eyes smaller, vertex relatively wider, height of head below eye about equal to height of an eye; head sloping and not nearly so erect as in male; antennal segment two more slender than in male; pronotum quadrate in form, anterior margin largely obscured by head, anterolateral angles rounded, nearly flat longitudinally, somewhat rounded transversely, distinctly carinate laterally, with an erect fine spine, lateral margin distinctly sinuous, posterior margin nearly straight, obscuring mesoscutum; scutellum small, very slightly swollen; hemelytra just covering abdomen, corium slightly shortened, membrane distinctly shortened.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 686. Western New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Cyclops Mountains, Ifar, 300 m., June 22, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPE: Same data as holotype, but June 21 (Bishop), 1♀.

Biromiris enarotadi, new species

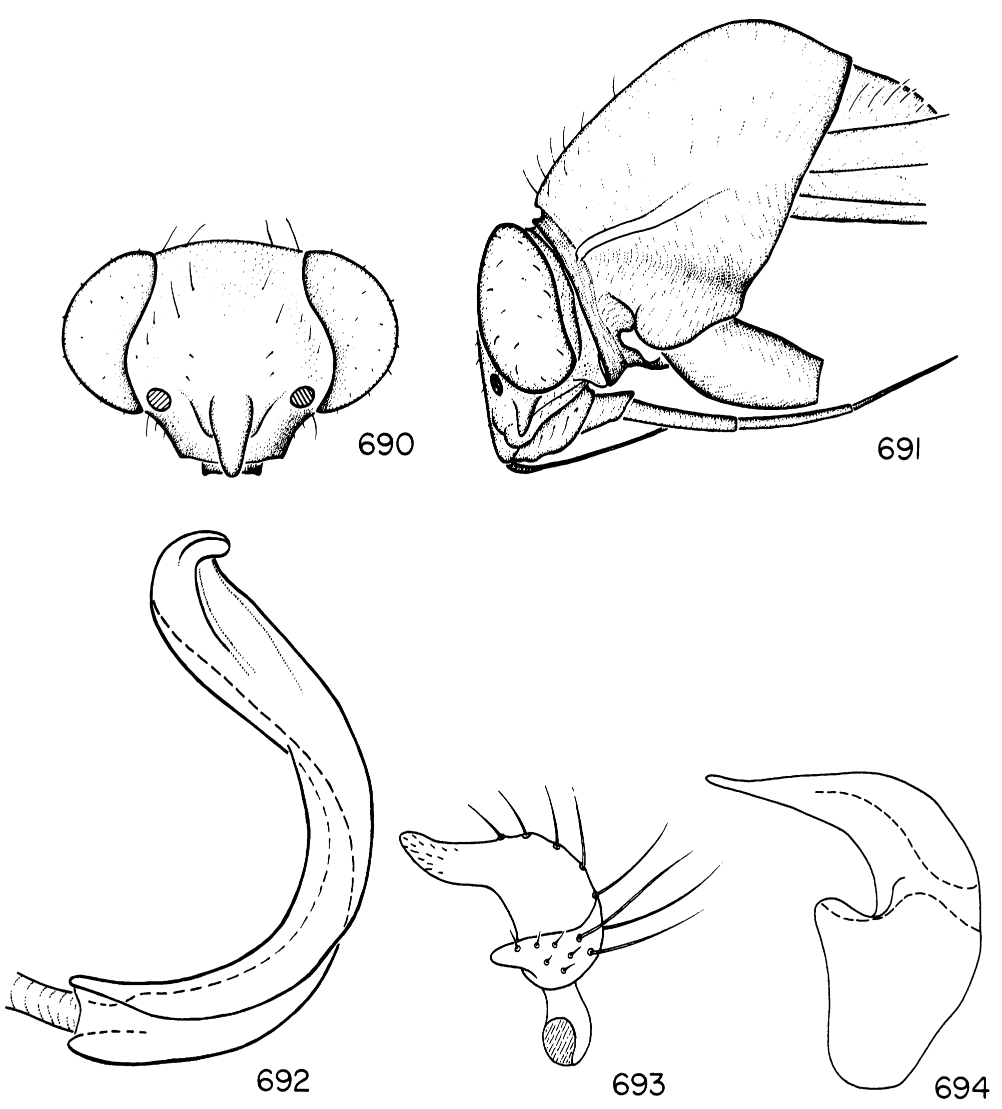
Figures 686, 689–698

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the straight posterior margin of the vertex, the weakly swollen scutellum, and the weakly lanceolate erect setae on the hemelytra (fig. 689); separated from *cyclops* by its much larger size.

DESCRIPTION: Macropterous male. Body form relatively elongate, length apex tylus-cuneal fracture 2.50, width pronotum 1.12; general coloration of head and thorax red-brown, clavus and corium golden; appendages, abdomen, and posterior portion of cuneus castaneous except tibiae distally and tarsi yellowish; scent gland opening yellow dorsally; membrane very dark, veins somewhat lighter and contrasting.

Surface texture as in generic description; hemelytra without pruinosity; hemelytral vestiture with suberect, rather long, simple light brown setae, and some weakly lanceolate, erect, dark setae (fig. 698), and some moderately long, appressed, shining setae; metatibiae with some suberect pale spines.

Head weakly concave behind, posterior margin nearly straight across, and not conforming to nor obscuring anterior margin of pronotum; posterior margin of vertex straight



FIGS. 690–694. *Biromiris enarotadi.* 690. Frontal view of head, ♂. 691. Lateral view of head and prothorax, ♂. 692. Vesica. 693. Left paramere. 694. Phallotheca.

across between eyes; antennae inserted at ventral margin of eyes, eyes moderately emarginate above antennal insertion (fig. 690); length of antennal segment one not quite equal to width of vertex; gula with a distinct transverse roll (fig. 691); anterior margin of pronotum as in figure 696; scutellum weakly swollen; anterior corial margin not reflexed ventrally; cuneal incisure in the form of a deep notch; metathoracic scent-gland evaporatory area as in figure 695; abdomen as in figure 697; metatibiae weakly but distinctly flattened.

MALE GENITALIA: Figures 692–694.

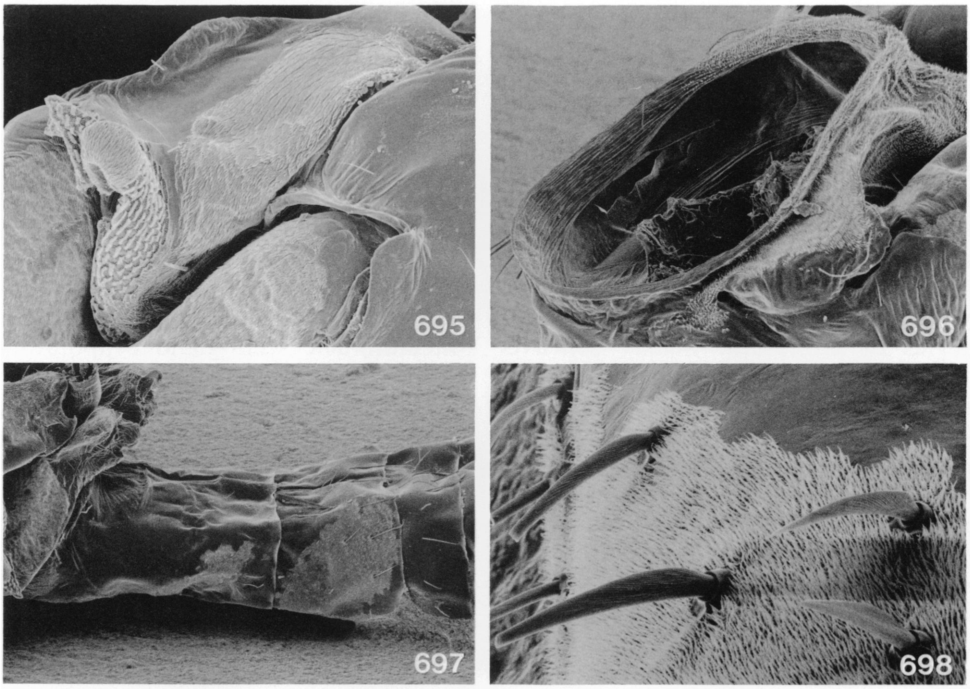
FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 686. Western New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Wisselmeren, Duroto E of Enarotadi, 1800



FIGS. 695–698. *Biromiris enarotadi.* 695. Lateral view of metathorax. 696. Pronotal collar. 697. Lateroventral view of anterior two-thirds of abdomen. 698. Detail of enlarged hemelytral setae on pruinose area.

m., August 21, 1955, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: INDONESIA: *West Irian:* Enarotadi, 1900–2000 m., August 2–21, 1955 (Gressitt; AMNH, Bishop), 2♂♂; Okaitadi, 1800 m., August 7, 1955 (Gressitt; Bishop), 1♂.

CTYPOMIRIS, NEW GENUS

DIAGNOSIS: Recognized by the flattened collar-like anterior margin of the pronotum, the highly polished head, pronotum, and scutellum, the distinctly punctured corium (except posterolaterally) and clavus (figs. 700, 709), the pronotum completely obscuring the mesoscutum, the presence of a stridulatory plectrum on the inner surface of the metafemur (figs. 713, 714), the corium and cuneus swollen adjacent to the cuneal fracture, the base of the cuneus contrastingly light (figs. 700, 709), the humeral angles of the pronotum shoulder-like, and the spine on the apex of the vesica (figs. 703, 706).

DESCRIPTION: Macropterous male. Moderately antlike, relatively small, range length apex tylus-cuneal fracture 1.86–2.20, range width pronotum 0.76–0.88; body including head, pronotum, scutellum, thorax ventrally, and abdomen deep, polished castaneous; hemelytra variable, but anterior one-third of corium, except extreme base, transparent, and corium at apex of clavus with a small, round, distinct white spot, cuneus always white on basal one-half and strongly contrasting with dark posterior portion; appendages variable in coloration; head, thorax, most of abdomen, and femora highly polished, very smooth and shining; hemelytra with dull, matte surface, not pruinose, corium (except posterolaterally), and clavus distinctly punctured; entire membrane dull; dorsum covered with long, suberect, dark, dull simple setae; eyes with distinct interommatidial setae; antennal segment one with a few pale, erect, spines on inner surface; antennal segments two, three, and four with short, reclining, slightly shaggy vestiture; anterolateral angles of pronotum with an erect, fine spine;

meso- and meta-femoral trichobothria as in figures 711 and 712; all tibiae with reclining common setae and some suberect pale spines of length slightly greater than tibial diameter; pro- and meso-tibiae sometimes with a well defined row of tiny black spicules on dorsal and ventral surface, metatibiae always with several rows of spicules.

Head in dorsal view appearing weakly flattened anteroposteriorly, eyes sometimes distinctly projecting laterally beyond anterolateral angles of pronotum, weakly concave behind, accepting but not completely obscuring anterior margin of pronotum; vertex distinctly declining anteriorly, concave between eyes; frons either flat or weakly rounded in dorsal view, tylus not visible from above; eyes occupying most of height of head in lateral view (figs. 702, 708), size variable between species and width of vertex and frons correspondingly variable, anterior margin weakly to distinctly emarginate at antennal insertion (figs. 701, 707); antennal fossae nearly contiguous with anterior margin of eyes; antennal segment one coke-bottle-shaped, relatively elongate and slender, segment two distinctly slender proximally, increasing to about diameter of segment one distally, segments three and four subequal in diameter, about equal to proximal diameter of segment two; buccal cavity broadly ovoid; genae narrow; gula short, curved; labium reaching near apices of mesocoxae; pronotum with posterior lobe distinctly swollen and elevated, subtumid, anterior margin strongly depressed, forming a distinct flat, rugose collar of width slightly less than tibial diameter, collar distinctly encircling entire anterior margin of pronotum, somewhat narrower ventrally than dorsally (figs. 702, 708); lateral pronotal margins moderately to strongly concave, posterior margin convex mesially and obscuring mesoscutum, posterolateral angles projecting and shoulder-like; mesoscutum completely obscured by pronotum (setae usually arising from scutellum near posterior margin of pronotum; scutellum rather strongly elevated anteriorly, strongly transversely rounded, very smooth, weakly swollen mesially, flattened on extreme margin posterolaterally and posterior one-fourth flat and rugose; hemelytra nearly flat, lateral margins distinctly sinuous, narrowest at level of midpoint of claval commissure, widest and of about equal width basally and just anterior to cuneal incisure; corial margin without overhanging setae, somewhat reflexed ventrally on anterior one-half, but not obscured in dorsal view; corium and cuneus distinctly swollen adjacent to cuneal fracture; cuneal fracture distinctly depressed and troughlike in appearance, weakly angled anteromesially, cuneal incisure shallow; large cell of membrane distinctly angulate posteromesially; metathoracic scent-gland evaporatory area somewhat elevated laterally (dorsally), anterior evaporatory area overlapping posterior; abdomen elongate, moderately slender, width slightly greater posteriorly, not broadly attached to thorax, abdominal sternite one about as long as wide and about as long as sternite two, genital capsule occupying about one-fifth of total abdominal length; all femora elongate, slender, weakly cylindrical, metafemora distinctly curved in dorsal and lateral view swollen distally, interior surface devoid of setae and with a stridulatory plectrum in the form of a series of small bumps as in figures 713 and 714; tibiae cylindrical; metatarsal segments one and two subequal in length, segment one much shorter; claws moderately long, slender gently curving, slightly broadened basally, puvilli small, parempodia setiform.

MALE GENITALIA: Vesica roughly C-shaped, very weakly twisted, secondary gonopore not visibly developed, apex of vesica with a slender spine with terminal spicules (figs. 703, 706); phallotheca more or less L-shaped, tapering distally (fig. 704); left paramere short, stocky, with moderately developed anterior process, posterior process elevated, elongate, moderately slender and weakly acuminate (fig. 705).

FEMALE: Macropterous. Eyes slightly smaller than in male, vertex relatively wider, face below eyes relatively longer, face more strongly produced anterior to eyes in dorsal view, antennal segment two somewhat more slender than in male, pronotum less strongly swollen.

FEMALE GENITALIA: Posterior wall simple.

TYPE SPECIES: *Ctypomiris brendae,* new species.

ETYMOLOGY: From the Greek *ctypos* (noise) and *miris*; indicating the presence of an ap-

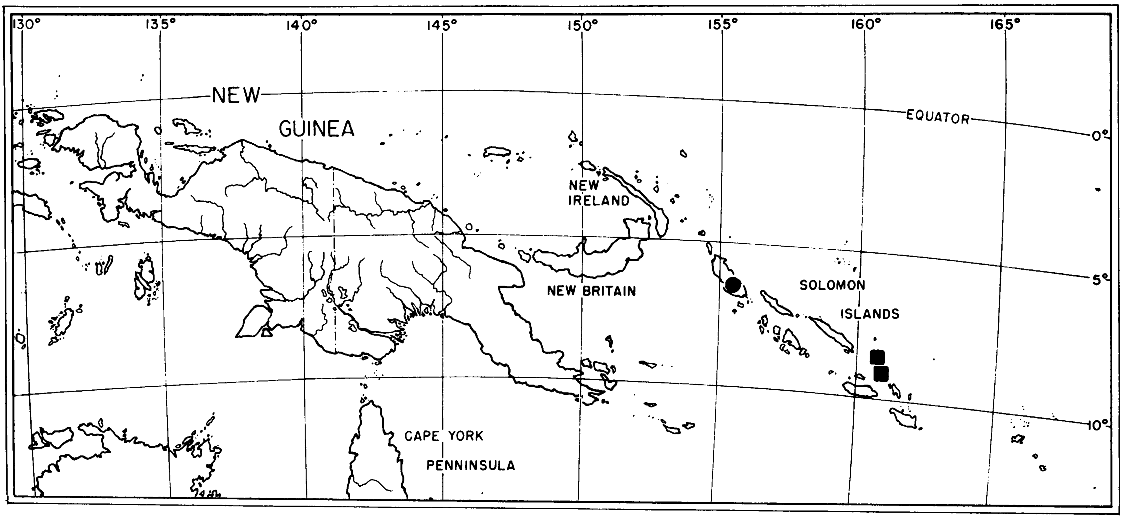


FIG. 699. Distribution of *Ctypomiris brendae* (■) and *C. kokure* (●).

parent stridulatory device and the consequent ability to produce sound; masculine.

DISTRIBUTION: Figure 699. Solomon Islands.

Ctypomiris brendae, new species

Figures 699–705

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the generally castaneous coloration of the hemelytra, the relatively small eyes (fig. 700), and the form of the male genitalia (figs. 703–705).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.86, width pronotum 0.77; general coloration of body deep, rich castaneous; head yellow-brown; apex of scutellum yellow; membrane generally very dark, with light bloom basally and broadly around posterior margin; antennae yellow with castaneous rings proximally on segments one and two and distally on segment one, distal one-third of segment two castaneous, distal one-half of segment four castaneous; all coxae and trochanters, tarsi, and labium yellow, except procoxae tinged with castaneous distally; all femora generally castaneous, pro- and meso-femora yellow subapically, metafemora yellow apically, all tibiae castaneous proximally, yellow distally.

Surface texture and vestiture as in generic description; pro- and meso-tibiae with well-developed row of tiny black spicules.

Eyes not especially large, only weakly projecting beyond anterolateral margin of pronotum (fig. 700); vertex relatively broad; frons weakly rounded in dorsal view; eyes weakly emarginate at antennal insertion (fig. 701); labium reaching to apex of mesocoxae; pronotum moderately swollen posteriorly, lateral margins moderately concave.

MALE GENITALIA: Figures.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Brenda Marie Massie.

DISTRIBUTION: Figure 699. Solomon Islands.

HOLOTYPE ♂: SOLOMON ISLANDS: *Malaita Island:* Tangtalau-Kwalo, 200–500 m., September 30, 1957, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 1♀. SOLOMON ISLANDS: *Malaita Island:* E of Kwalo (E of Anki), 350 m., September 28, 1957 (Gressitt; AMNH, Bishop), 2♂♂.

Ctypomiris kokure, new species

Figures 699, 707–714

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the castaneous body with the corium and clavus generally yellow

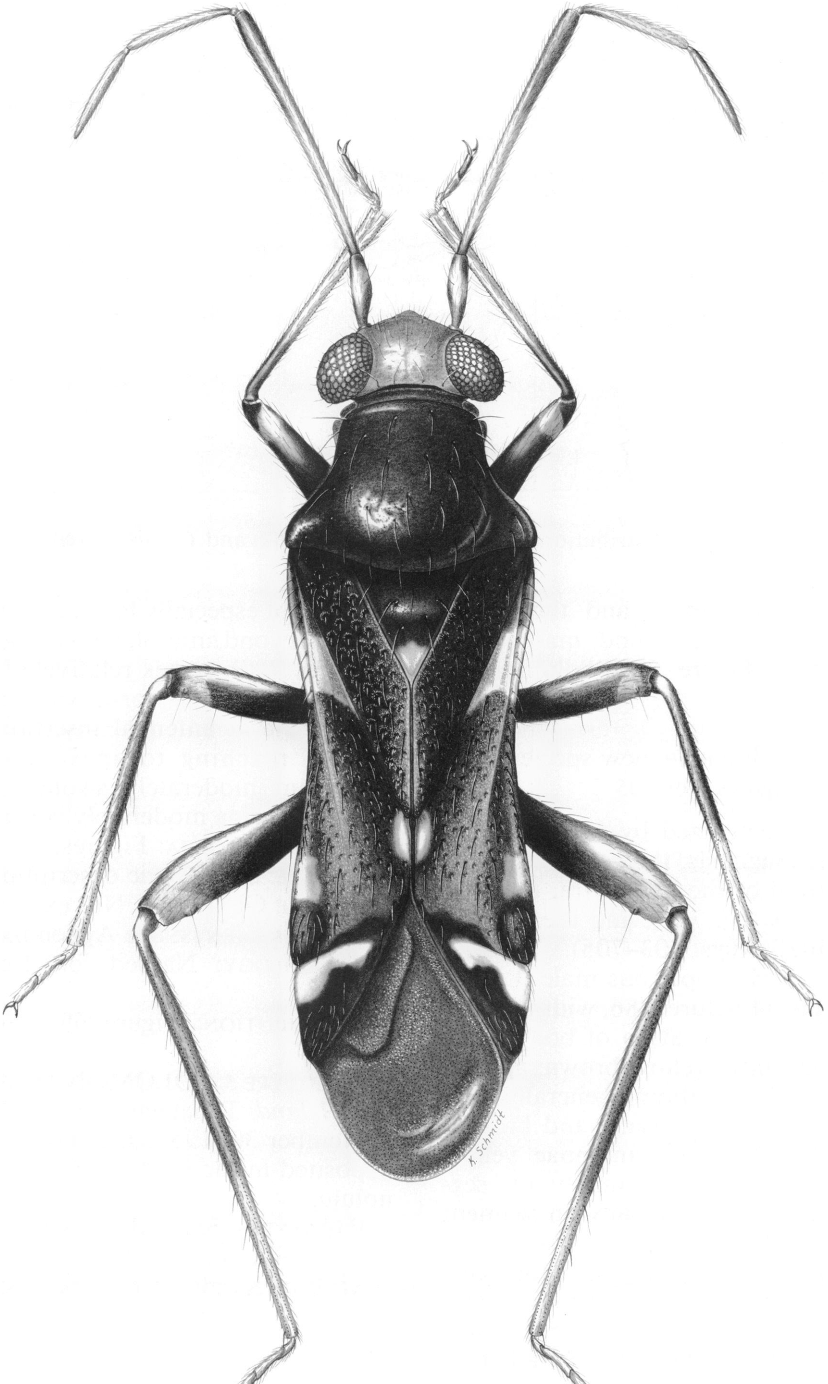
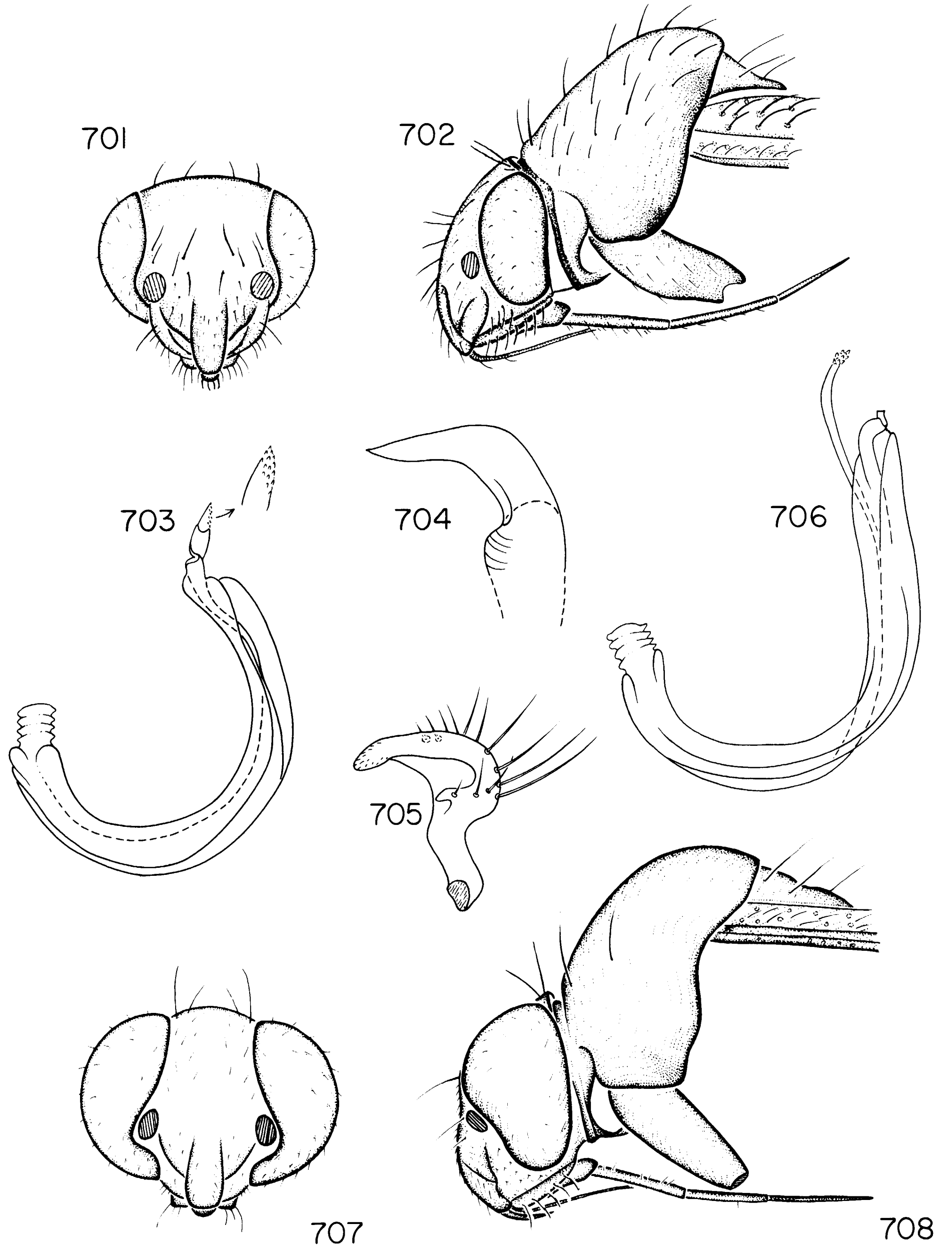


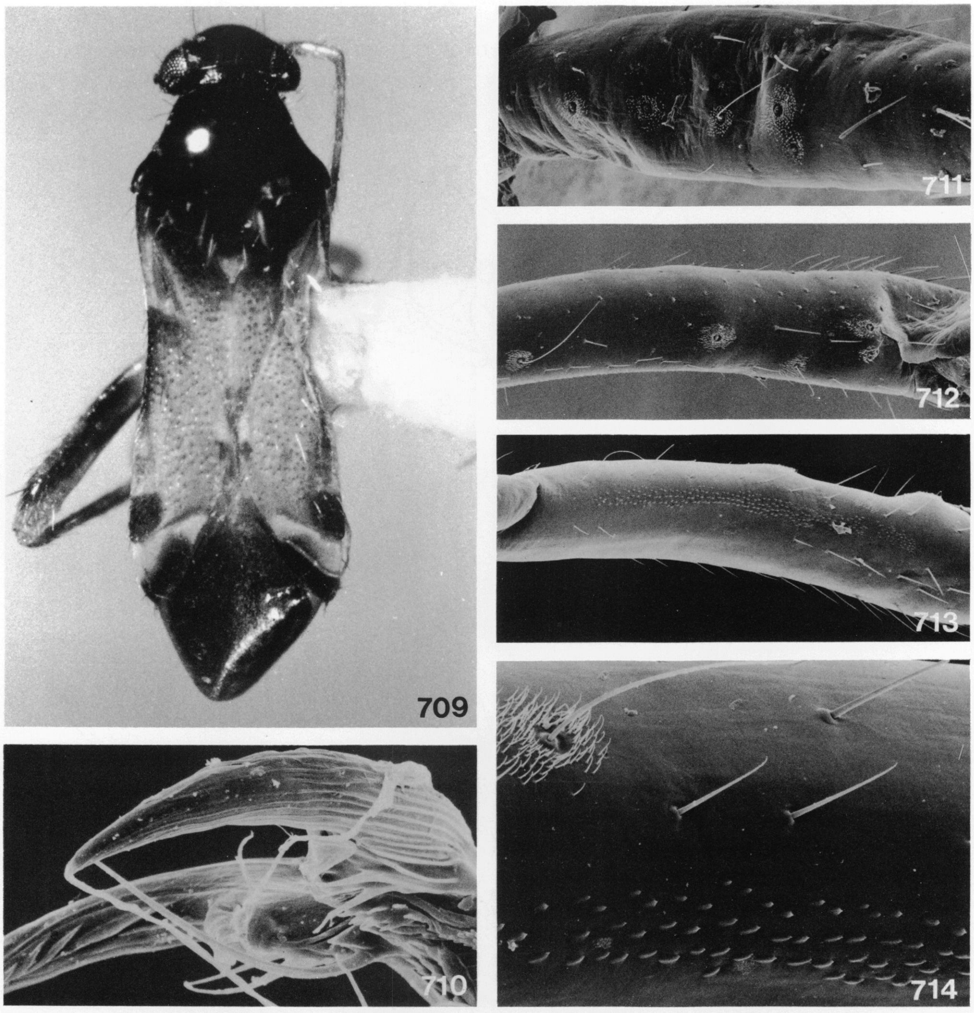
FIG. 700. *Ctypomiris brendae.*



FIGS. 701–708. 701–705. *Ctypomiris brendae.* 701. Frontal view of head, ♂. 702. Lateral view of head and prothorax, ♂. 703. Vesica. 704. Phallotheca. 705. Left paramere. 706–708. *Ctypomiris kokure.* 706. Vesica. 707. Frontal view of head, ♂. 708. Lateral view of head and prothorax, ♂.

posterior to the apex of the scutellum, the relatively large eyes in the male (figs. 707, 708), and the form of the male genitalia (fig. 706).

DESCRIPTION: Macropterous female. Length apex tylus-cuneal fracture 1.97, width pronotum 0.78 (holotype); general coloration castaneous, including extreme base of corium,



FIGS. 709–714. *Ctypomiris kokure*. 709. Paratype, ♂. 710–714. Paratype, ♀. 710. Pretarsus. 711. Mesofemur, showing trichobothria. 712. Metafemur, showing trichobothria. 713. Metafemur, showing stridule. 714. Metafemur, detail of stridule and trichobothrium.

clavus adjacent to scutellum, corium weakly posterior to transparent area, a quadrate area on corium at cuneal fracture, cuneus posteriorly, and most of membrane, remainder of hemelytra (including base of membrane) and appendages generally, yellow; ventral portion of metathoracic scent-gland evaporatory area yellowish; mesial portion of metafemora broadly, and basal one-third of metatibiae, castaneous.

Surface texture and vestiture as in generic description; meso- and meta-femoral trichobothria as in figures 711 and 712; pro- and meso-tibiae with at most poorly developed and irregular rows of tiny spicules.

Eyes distinctly projecting laterally beyond anterolateral angles of pronotum; vertex broad (relatively narrow in male); frons distinctly rounded (flat in male); eyes very weakly emarginate at antennal insertion (moderately strongly so in male; fig. 707); labium reaching to apex of mesocoxae; pronotum subtumid, posterolateral angles not distinctly shoulder-like (shoulder-like appearance pronounced in male), lateral margin rather strongly concave; stridulatory plectrum of metafemora as in figures 713 and 714; pretarsus as in figure 710.

FEMALE GENITALIA: Posterior wall simple.

MALE: Macropterous. See generic description and description of female above.

MALE GENITALIA: Figure 706.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Figure 699. Named for the type locality, Kokure, Bougainville, Solomon Islands.

HOLOTYPE ♀: PAPUA NEW GUINEA: *Bougainville Prov.:* Bougainville (south), Kokure near Crown Prince Ra., 900 m., June 11, 1956, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype except June 3–15, 1956 (AMNH, Bishop), 1♂, 5♀♀.

PAPUAMIMUS, NEW GENUS

DIAGNOSIS: Very similar in appearance and structure to *Arafuramiris*, but lacking minute scalelike setae on the hemelytra; recognized by the broad, flattened, slightly depressed collar completely encircling the anterior pronotal margin, the head, pronotum, and scutellum highly polished and very smooth, the posterior pronotal margin completely obscuring the mesoscutum, the hemelytra constricted mesially, the anterior costal margin reflexed ventrally and the costa obscured in dorsal view, the hemelytra distinctly punctured and with only long, erect, simple setae, corium and clavus swollen adjacent to cuneal fracture, clavus slightly elevated along claval commissure (figs. 716, 717), abdominal segment two elongate and with striate areas lateroventrally.

DESCRIPTION: Macropterous male. Antlike, moderate sized, range length apex tylus-cuneal fracture 1.71–1.86, range width pronotum 0.68–0.87; general coloration golden to mahogany; corium transparent at extreme base and exocorium transparent at level of apex of clavus; corium with a round spot at apex of clavus; cuneus white basally, strongly contrasting with castaneous posterior portion; head, pronotum, scutellum, thoracic venter, abdomen, and all femora highly polished and shining; hemelytra dull, shallowly but distinctly punctured (figs. 716, 717), with some weak but obvious pruinose areas in the form of transverse fasciae; membrane with microspicules sometimes forming dull bloom; dorsum covered with very long, erect, pale or light brown, weakly shining simple setae; eyes with distinct interommatidial setae; antennal segment one with a few fine erect spines on interior surface, segments two, three, and four with short to moderately long reclining vestiture, sometimes with slightly shaggy appearance; no fine, erect spine visible on anterolateral angles of pronotum in known specimens; all tibiae with reclining, pale, common setae intermixed with reclining suberect pale spines as long as or slightly longer than tibial diameter; pro- and meso-tibiae with a single row of tiny black spicules on dorsal and ventral surfaces, metatibiae with several rows.

Head transverse in dorsal view, appearing much wider than long, extending well beyond anterolateral angles of pronotum laterally, posterior margin nearly straight across or somewhat concave, roughly conforming to but not obscuring anterior pronotal margin; vertex wider than width of an eye, nearly erect, posterior margin erect, carinate or sharply rounded; frons smoothly rounded and slightly projecting beyond anterior margin of eyes (figs. 716, 717); eyes in lateral view occupying about two-thirds of height of head (figs. 720, 725), moderately emarginate at antennal insertion, antennae inserted about one-third distance above ventral margin of eyes, fossae distinctly removed from anterior margin of eyes (figs. 719, 724); antennal segment one coke-bottle-shaped, moderately stout to relatively elongate, segment two slightly bent, either narrow proximally and increasing in diameter distally or thicker and of nearly uniform diameter over entire length, segments three and four slender, subequal in diameter; buccal cavity very broad anteriorly, ovate; genae behind lora in the form of a rather distinct or very broadly rounded ridge; gula obsolete; labium reaching to between base and apex of mesocoxae; pronotum with a broad, flattened, depressed collar encircling entire anterior margin (figs. 716, 717), posterior lobe moderately to strongly elevated and swollen, posterior margin decurved and completely obscuring mesoscutum; scutellum small, only slightly swollen anteriorly, depressed posteromesially, apex flat, lateral

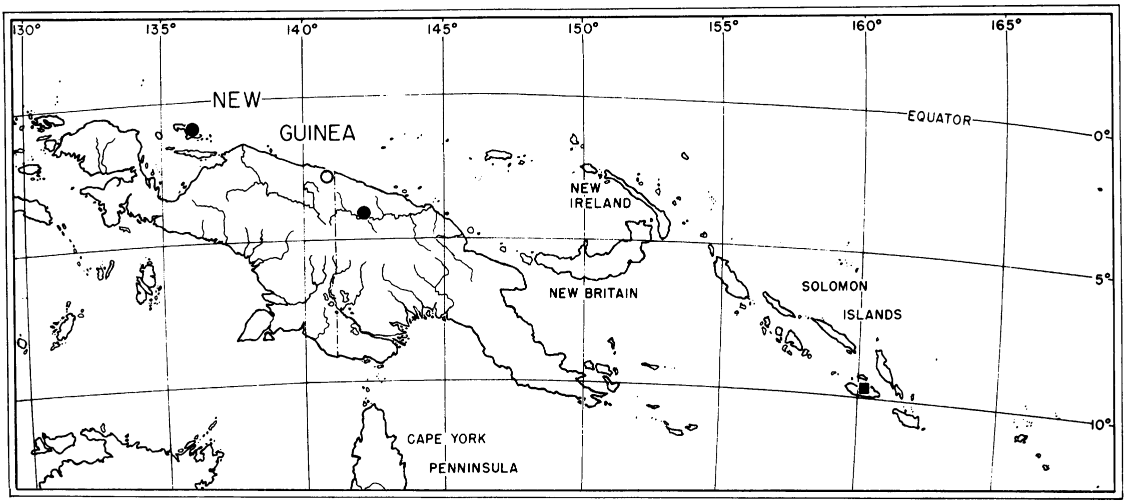


FIG. 715. Distribution of *Papuamimus* spp. and *Solomonomimus roroni. P. irianicus* (○); *P. maai* (●); and *S. roroni* (■).

margins with a few punctations; hemelytra flat, lateral margins distinctly sinuous, narrowest at about midpoint of claval commissure, corial margin reflexed ventrally on anterior one-third and not visible in dorsal view, clavus slightly elevated along commissure; corium and cuneus swollen adjacent to cuneal fracture, fracture troughlike, very weakly angled anteromesially or perpendicular to wing margin, cuneal incisure shallow; large cell of membrane sharply to broadly rounded posteromesially; anterior portion of scent-gland evaporatory surface overlapping posterior area; abdomen weakly to distinctly petiolate, moderately broadly to narrowly attached to thorax, first complete sternite at least as long as broad, with a striated area lateroventrally as also found in *Arafuramiris* and *Waterhouseana,* of length as great as or distinctly greater than length of sternite two, abdomen weakly to distinctly broadened posteriorly; genital capsule occupying about one-fifth of length of abdomen; all femora elongate, slender, more or less cylindrical, metafemora weakly bowed and swollen anteapically; all tibiae cylindrical, metatibiae distinctly curving; metatarsal segments two and three subequal in length, segment one much shorter; claws elongate, slender, gently curving, slightly broadened basally, pulvilli small; parempodia setiform, weakly convergent apically.

MALE GENITALIA: Vesica J-shaped, weakly twisted, secondary gonopore subapical, weakly developed and sclerotized, subtended distally by a rather long slender spine (fig. 712); phallotheca L-shaped, elongate basally, weakly elongate and narrowed apically (fig. 723); left paramere short and stocky, posterior process somewhat elevated and only moderately elongate (fig. 722).

FEMALE: Unknown.

TYPE SPECIES: *Papuamimus irianicus,* new species.

ETYMOLOGY: Named for its occurrence in New Guinea and the antlike appearance; masculine.

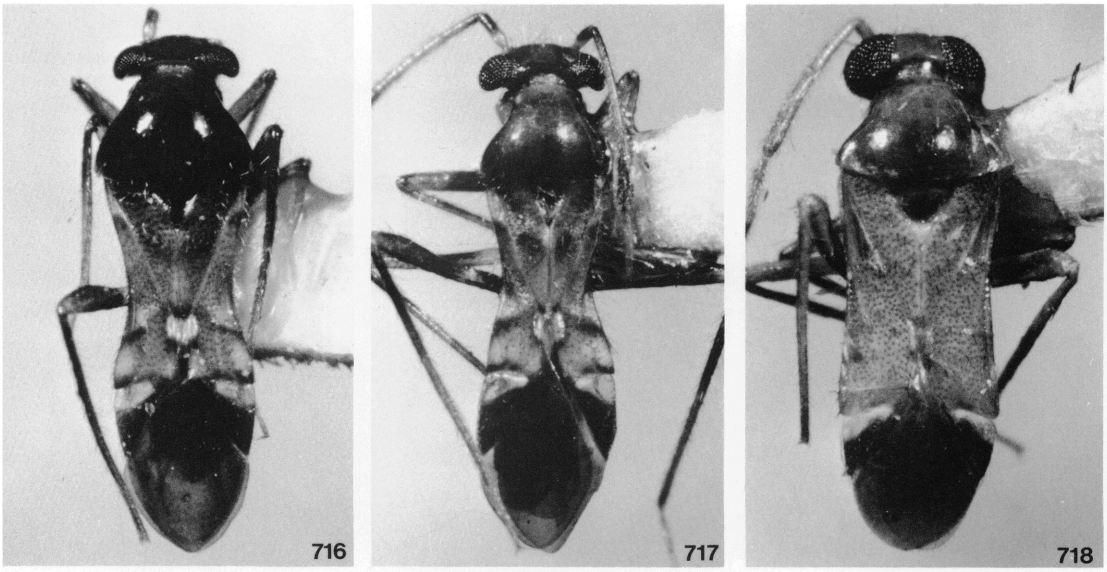
DISTRIBUTION: Figure 715. Western New Guinea.

ADDITIONAL SPECIMENS: Two male specimens (Bishop) are available, one from Hollandia-Binnen, West Irian and the other from Ambunti, East Sepik Prov., Papua New Guinea.

Papuamimus irianicus, new species

Figures 715, 716, 719–723

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the second antennal segment completely castaneous, of nearly uniform diameter at least as great as that of segment one, the tumid pronotum, the dimensions, and the form of the male genitalia (figs. 721–723).



FIGS. 716–718. *Papuamimus* spp. and *Solomonomimus roroni.* 716. *P. irianicus,* holotype. 717. *P. maai,* holotype. 718. *S. roroni,* holotype.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.86, width pronotum 0.87; head and anterior lobe of pronotum golden brown, posterior lobe of pronotum mahogany; corium and clavus nearly golden; abdomen light basally and castaneous on posterior half; antennal segment one mesially and segment three proximally light, remainder of antennae castaneous; prolegs yellow brown, meso- and meta-femora and tibiae at least partly mahogany, meso- and meta-tibiae distally and all tarsi yellowish; membrane very dark.

Surface texture and vestiture as in generic description.

Posterior margin of head nearly straight across; posterior margin of vertex sharply rounded (fig. 716); antennal segment two of nearly uniform diameter over entire length, diameter as great as or greater than that of segment one; genae with a very broadly rounded ridge; labium reaching to base of mesocoxae; posterior lobe of pronotum strongly swollen, tumidiform; cuneal fracture very weakly angled anteromesially; large cell of membrane sharply rounded posteromesially.

MALE GENITALIA: Figures 721–723.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in West Irian.

DISTRIBUTION: Figure 715. Western New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Cyclops Mountains, Ifar, 300 m., June 21, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPE: Same data as holotype (Bishop), 1♂.

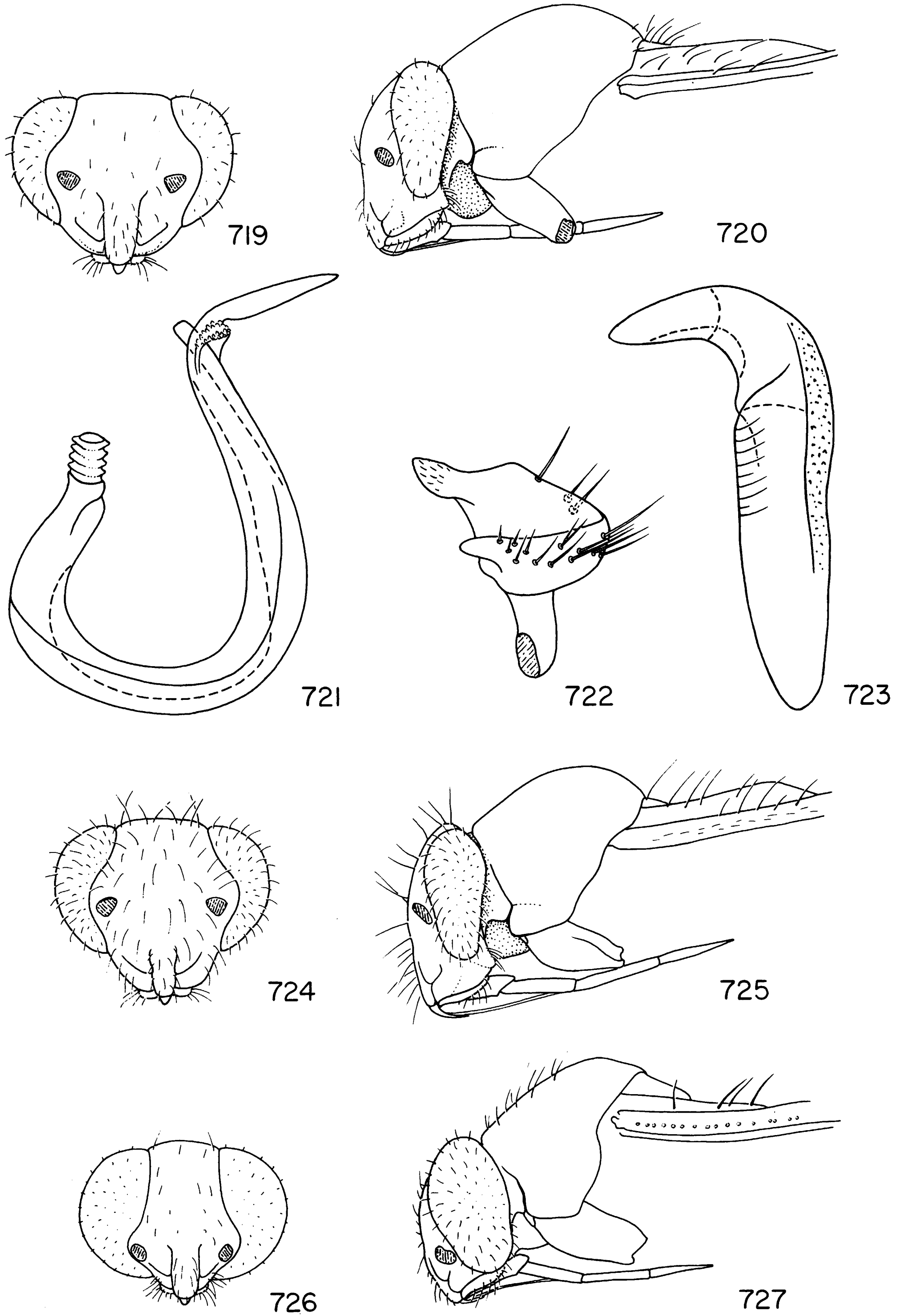
ADDITIONAL SPECIMEN: Same data as holotype (Bishop), sex unknown.

Papuamimus maai, new species

Figures 715, 717, 724, 725

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the second antennal segment mahogany at the extreme base and on distal two-fifths with yellowish intervening area, proximal four-fifths of segment two of diameter less than that of segment one, the relatively weakly swollen pronotum, and the dimensions.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.71, width pronotum 0.68; general coloration golden brown to mahogany, pronotum dark only on posterior margin; posterior margin of vertex red; an-



FIGS. 719–727. *Papuamimus* spp. and *Solomonomimus roroni.* 719–723. *P. irianicus.* 719. Frontal view of head, ♂. 720. Lateral view of head and prothorax, ♂. 721. Vesica. 722. Left paramere. 723. Phallotheca. 724, 725. *P. maai.* 724. Frontal view of head, ♂, 725. Lateral view of head and prothorax, ♂. 726–727. *S. roroni.* 726. Frontal view of head, ♂. 727. Lateral view of head and prothorax, ♂.

tennal segment one on interior surface on distal one-half, narrow ring on base and distal two-fifths of segment two, meso- and metafemora irregularly, and proximal one-half of meso- and meta-tibiae mahogany; abdomen yellowish basally and castaneous on posterior one-half; remainder of legs and antennae mostly yellowish; corium and clavus golden, clavus largely brownish just posterior to scutellum, corium and apex of clavus brownish at level of apex of clavus; membrane very dark.

Surface texture and vestiture as in generic description.

Posterior margin of head distinctly concave, posterior margin of vertex carinate, straight mesially, inset anteriorly from posteromesial angles of eyes; antennal segment two narrow on proximal four-fifths, of diameter slightly less than that of segment one, distal one-fifth of diameter about equal to that of segment one; genae in the form of a distinct ridge behind lora; labium reaching to apex of mesocoxae; posterior lobe of pronotum only moderately elevated and swollen; cuneal fracture perpendicular to corial margin; large cell of membrane broadly rounded posteromesially.

MALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for T. C. Maa.

DISTRIBUTION: Figure 715. New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Biak Island, strand, June 24, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

ADDITIONAL SPECIMEN: PAPUA NEW GUINEA: *East Sepik Prov.:* Ambunti, Sepik River, 200 m., May 5, 1963, light trap (R. Straatman; Bishop), 1♂.

SOLOMONOMIMUS, NEW GENUS

DIAGNOSIS: Recognized by the more or less rectangular head in dorsal view, the flattened depressed collar completely encircling the anterior margin of the pronotum, the moderately swollen pronotum with the posterior margin completely obscuring the mesoscutum, the highly polished head, pronotum, and scutellum, the nearly parallel-sided, finely punctured hemelytra, the corial margin not reflexed ventrally, the corium and clavus swollen adjacent to the cuneal fracture producing a troughlike appearance (fig. 718), the rather broad parallel-sided abdomen, and with the first abdominal sternite somewhat broader than long.

DESCRIPTION: Macropterous male. Antlike habitus, small, range length apex tylus-cuneal fracture 1.82–1.86, range width pronotum 0.78–0.81; general coloration golden or golden brown with some darker areas; anterior one-third of endocorium transparent; one-third of length of costa transparent beginning anterior to swollen area on corium adjacent to cuneal fracture; corium with a small white, round spot at apex of clavus; cuneus broadly white basally, castaneous posteriorly; apex of scutellum white; head, pronotum, scutellum, thoracic venter, abdomen, and femora highly polished and shining; hemelytra matte; clavus, corium, and lateral margins of scutellum finely punctured; head, pronotum, and scutellum with relatively short, simple, pale suberect setae; corium and clavus with nearly erect, moderately heavy, weakly lanceolate, black setae of medium length; spines on interior surface of antennal segment one fine and pale; antennal segments two, three, and four with pale, shaggy vestiture; all tibiae with reclining, pale, simple setae, pro- and mesotibiae with some suberect, slender, pale spines; pro- and meso-tibiae with a single row of tiny black spicules on dorsal and ventral surfaces, metatibiae with several rows.

Head more or less rectangular in dorsal view (fig. 718); eyes very large, more or less quadrate in dorsal view, width of an eye greater than the width of the vertex; vertex weakly declining anteriorly, posterior margin nearly horizontal (not erect), sharply rounded, shallowly but distinctly concave; head behind distinctly concave, conforming to but not obscuring anterior margin of pronotum; frons weakly convex in dorsal view, very slightly projecting beyond anterior margin of eyes; eyes in lateral view occupying nearly entire height of head (fig. 727); antennae inserted just above ventral margin of eyes, anterior margin of eyes distinctly emarginate at antennal insertion, antennal fossae contiguous with anterior margin of eyes (fig. 726); antennal segment one coke-bottle-shaped, length about equal to width of vertex, segment two increasing to distal diameter slightly greater than that of segment one, segments three and four subequal in diameter, diam-

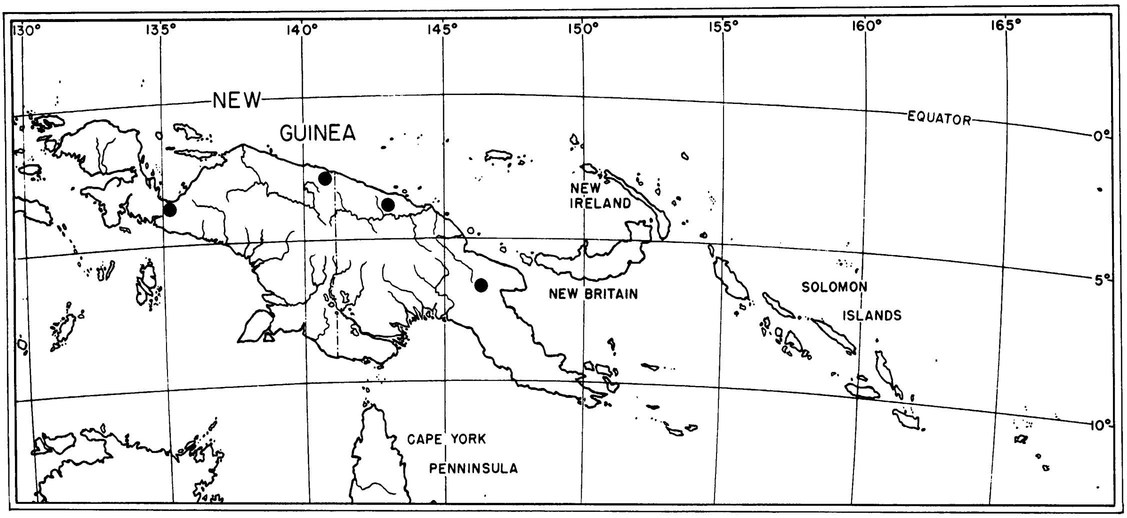


FIG. 728. Distribution of *Waterhouseana illustris.*

eter about equal to proximal diameter of segment two; genae very narrow; gula short, nearly vertical; buccal cavity ovoid, moderately broad; labium reaching to about apex of mesocoxae; pronotum with anterior margin in the form of a depressed flattened rugose collar about as wide as tibial diameter, encircling entire pronotum (fig. 718), posterior lobe of pronotum moderately swollen and elevated, lateral margins concave, posterior margin broadly rounded, decurved and entirely obscuring mesoscutum; scutellum declining posteriorly, somewhat swollen anteriorly, flat posteriorly; hemelytra flat, corial margin very weakly sinuous, not reflexed ventrally on anterior one-half, visible from above; corium and cuneus swollen adjacent to cuneal fracture, fracture troughlike, weakly sinuous and weakly angled anteromesially; large cell of membrane angulate posteromesially; anterior evaporatory area of metathoracic scent gland largely overlapping posterior area, dorsal (lateral) evaporatory area noticeably elevated; abdomen broadly joined to thorax, parallel-sided, first abdominal sternite somewhat shorter than broad, about as long as sternite two; genital capsule occupying about one-fifth of total length of abdomen; all femora elongate, slender, more or less cylindrical, metafemora distinctly bowed, and swollen anteapically; all tibiae cylindrical, metatibiae tapering slightly distally, slightly bent; metatarsal segments one and two subequal in length, segment one much shorter; claws elongate, smoothly curving, somewhat broadended basally, pulvilli small, parempodia setiform.

Male Genitalia: Not examined.

Female: Unknown.

Type Species: *Solomonomimus roroni,* new species.

Etymology: Named for its occurrence in the Solomon Islands and its antlike appearance; masculine.

Distribution: Figure 715. Solomon Islands.

Solomonomimus roroni, new species

Figures 715, 718, 726, 727

Diagnosis: See generic diagnosis.

Description: Macropterous male. See generic description.

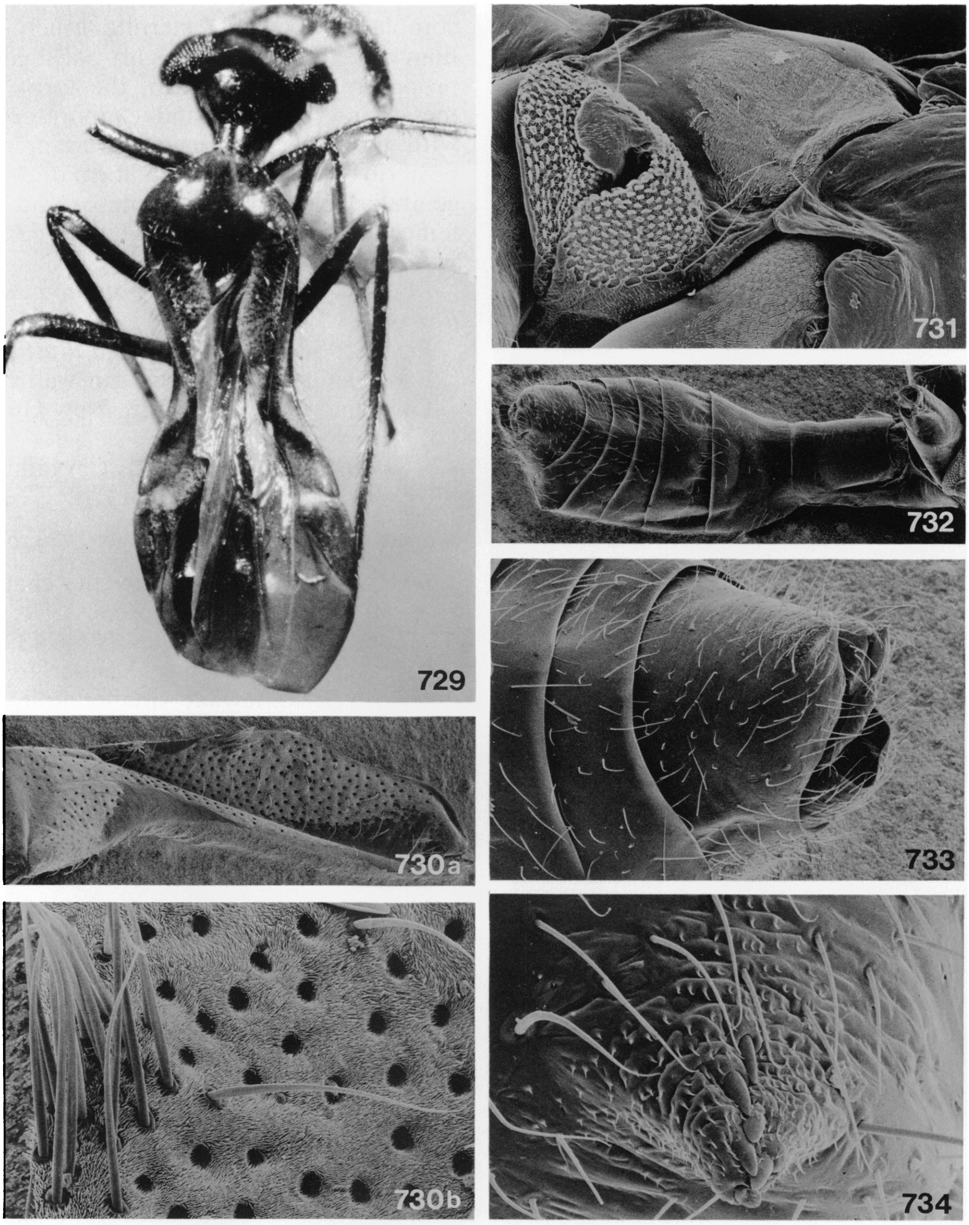
Male Genitalia: Not examined.

Measurements: See Appendix.

Etymology: Named for the type locality; a noun in apposition.

Distribution: Figure 715. Solomon Islands.

Holotype ♂: SOLOMON ISLANDS: *Guadalcanal:* Roroni, 35 km. E of Honiara, 10 m., May 9, 1964, light trap, R. Straatman collector; deposited in the B. P. Bishop Museum, Honolulu.

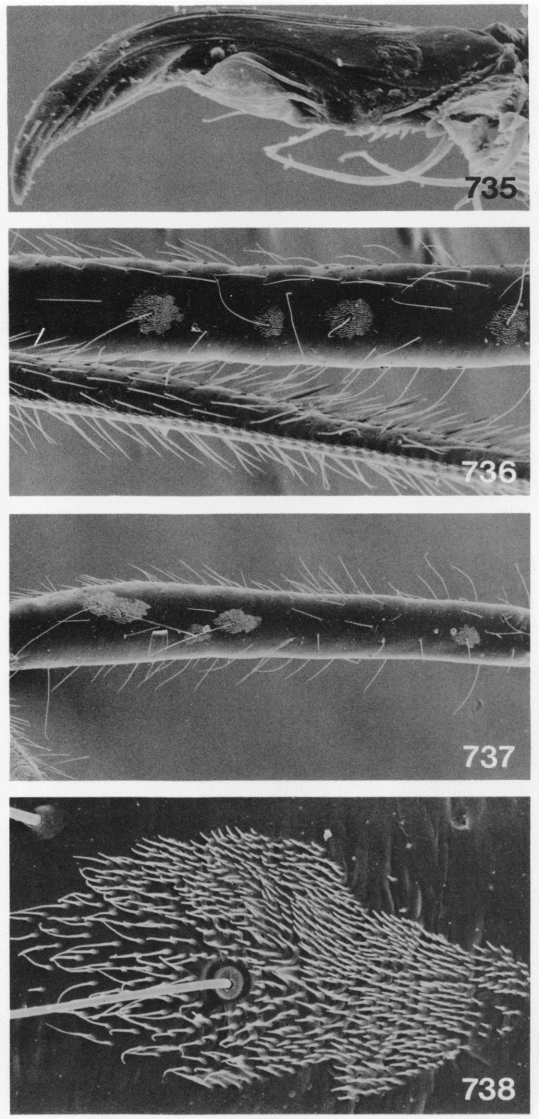


FIGS. 729–734. *Waterhouseana illustris.* 729. Dorsal view, ♂, Papua New Guinea, East Sepik Prov., Maprik. 730a. Hemelytron. 730b. Detail of clavus along commissure just posterior to scutellum. 731. Lateral view of metathorax. 732. Lateroventral view of abdomen showing elongate sternite 1 and possible stridule. 733. Genital capsule. 734. Detail of posteroventral spine of genital capsule.

WATERHOUSEANA CARVALHO

Waterhouseana Carvalho, 1973, p. 4.

DIAGNOSIS: Recognized by the strongly mesially constricted, hour-glass-shaped pronotum (fig. 729), the genae and gula densely covered with erect, long setae (figs. 739, 740), the anterior margin of the pronotum in the form of a flattened collar, the mesoscutum obscured by the pronotum, the



FIGS. 735–738. *Waterhouseana illustris.* 735. Mesioventral view of claw. 736. Mesofemur, showing trichobothria. 737. Metafemur, showing trichobothria. 738. Detail of trichobothrium 2 of metafemur.

corium strongly constricted mesially and reflexed ventrally on the anterior half, the clavi slightly elevated along the claval commissure, corium and clavus punctured (fig. 730a, b), the corium and cuneus swollen adjacent to the claval fracture, giving the fracture a somewhat troughlike appearance, the conspicuously petiolate abdomen with the first complete abdominal sternite much longer than wide (fig. 732), the highly polished head, pronotum, and scutellum, the form of the metathoracic scent-gland evaporatory area with the anterior portion overlapping the posterior (fig. 731), and the form of the male genitalia (figs. 741–743); meso- and metafemoral trichobothria as in figures 736–738; pretarsus as in figure 735.

MALE GENITALIA: See *Waterhouseana illustris.*

FEMALE: See *Waterhouseana illustris.*

FEMALE GENITALIA: Posterior wall simple.

DISTRIBUTION: Figure 728. New Guinea.

Waterhouseana illustris Carvalho
Figures 728–743

Waterhouseana illustris Carvalho, 1973, p. 5.

DIAGNOSIS: Recognized by the characters given in the generic diagnosis.

MALE GENITALIA: Figures 741–743.

FEMALE: Macropterous. Similar to male, except eyes somewhat smaller and nearly straight on mesial margin, not emarginate at antennal insertion; antennal segment two slender and increasing in diameter distally, not thickened and of uniform diameter as in male.

FEMALE GENITALIA: Posterior wall simple.

MEASUREMENTS: See Appendix.

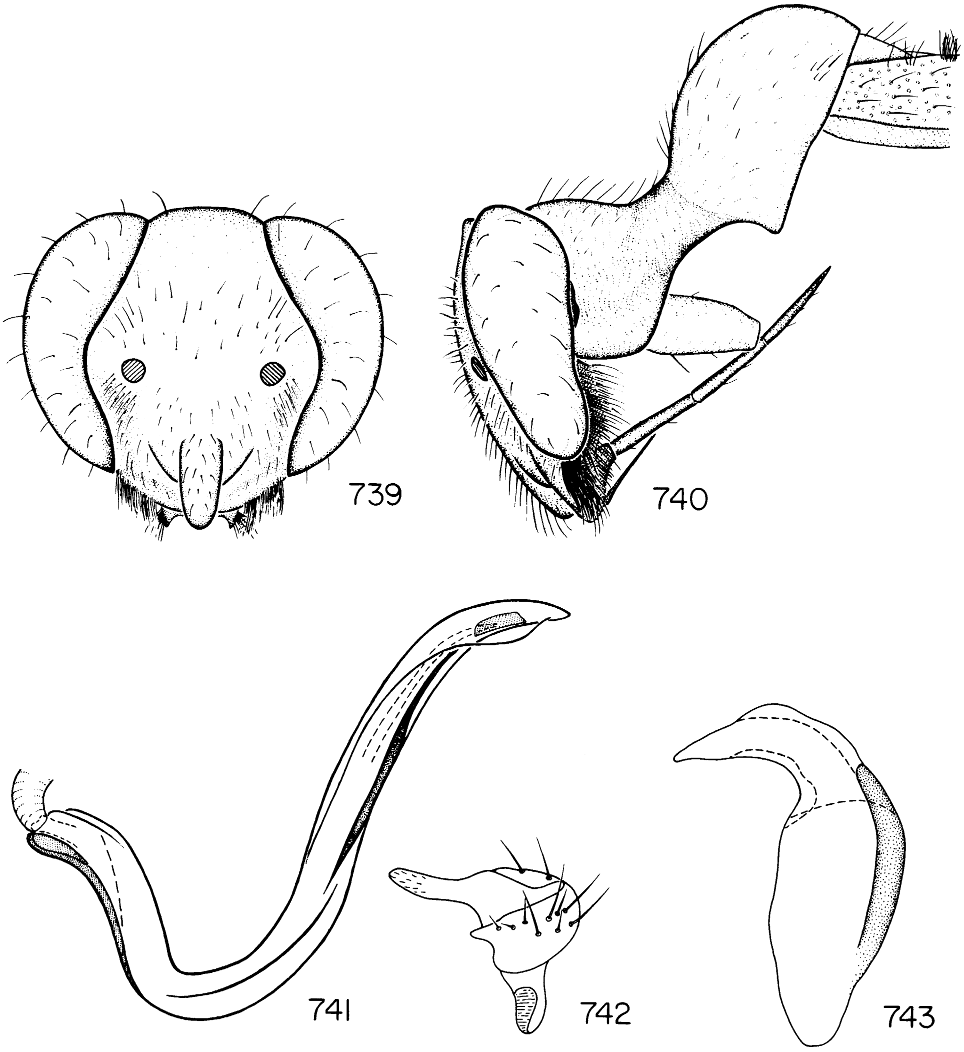
DISTRIBUTION: Figure 728. New Guinea.

SPECIMENS EXAMINED: INDONESIA: *Irian Jaya:* Hollandia area, W Sentani, Cyclops Mountains, 200–1000 m., June 22–25, 1955, sweeping (Maa; Bishop), 1♀; Nabire, S of Geelvink Bay, 10–40 m., October 3, 1962, undergrowth jungle (H. Holtmann; Bishop), 1♂. PAPUA NEW GUINEA: *East Sepik Prov.:* Maprik, 150 m., December 29, 1959–January 17, 1960 (Maa; AMNH, Bishop), 2♂♂, 1♀. *Morobe Prov.:* Nadzab, May 20–22, 1955, dry evergreen forest (Wilson; AMNH), 1♀.

GULACAPSUS GROUP

GULACAPSUS, NEW GENUS

DIAGNOSIS: Recognized by the antlike habitus, the gula long, more or less vertical, compressed, and keel-like (figs. 754–757), the ventral surface of the metafemora with a fringe of erect, moderately long, fine setae (fig. 753), the head weakly concave behind, the poste-



FIGS. 739–743. *Waterhouseana illustris.* 739. Frontal view of head, ♂. 740. Lateral view of head and prothorax, ♂. 741. Vesica. 742. Left paramere. 743. Phallotheca.

rior margin of the eyes contiguous with the anterior margin of the pronotum, the height of the head below the eyes equal to at least one-half the height of an eye, the anterior margin of the pronotum forming a moderately broad flattened collar, the light transverse fascia at least on the corium at the level of the apex of the scutellum, and the base of the cuneus usually light and contrasting with the remainder of the cuneus.

DESCRIPTION: Macropterous male. Antlike, relatively small, elongate, range distance apex tylus-cuneal fracture 1.98–2.39, range width pronotum 0.72–0.99; general coloration medium brown to nearly black, corium and sometimes also clavus with a contrasting light transverse fascia; base of cuneus sometimes of light contrasting coloration; body surface smooth, dull; dorsum covered with relatively long, reclining, simple, brown setae, corium and clavus posterior to light transverse fascia also with weakly flattened, recumbent, shining, golden setae and pruinosity (fig. 750); vertex and frons with relatively numerous, suberect, rather heavy setae; eyes with short interommatidial setae; broad genae and gular

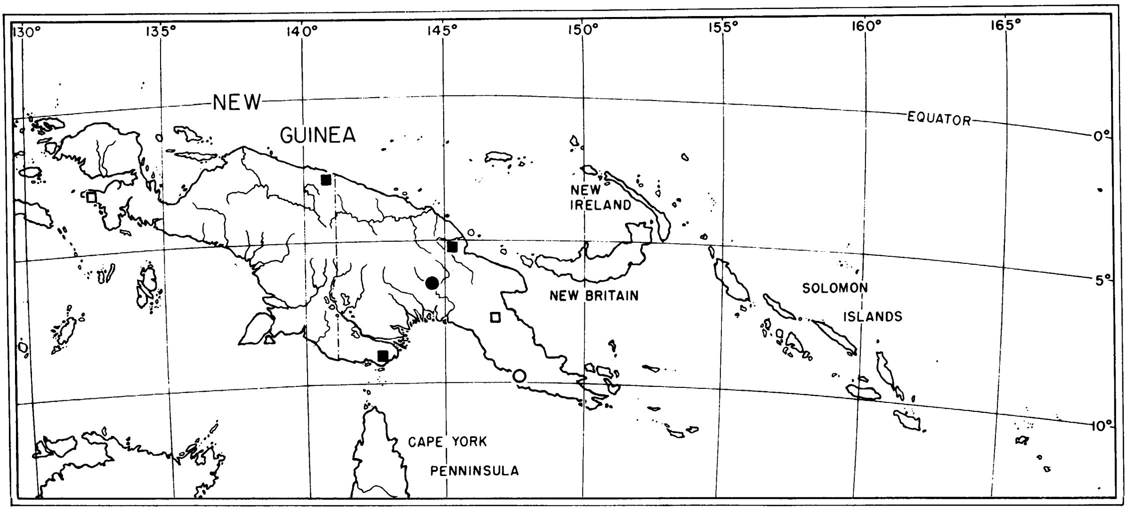
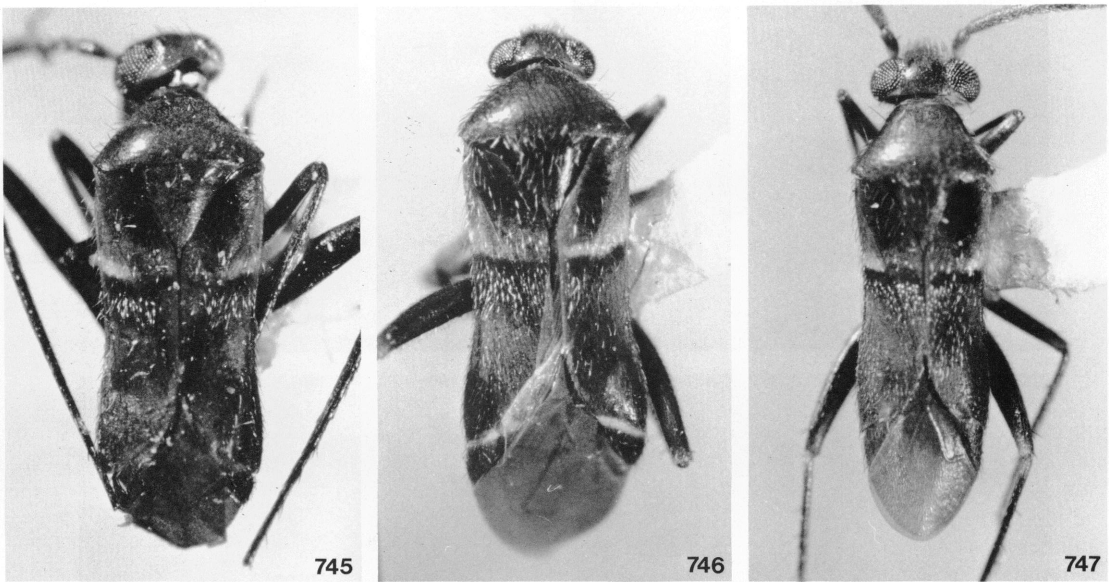


FIG. 744. Distribution of *Gulacapsus* spp. *G. moresbyana* (○); *G. nondugl* (●); *G. novoguinensis* (■); unidentified specimens (□).

area with scattered relatively long, brown, simple setae; anterolateral angles of pronotum with a single, erect, spinelike seta; antennal segment one with a few erect short spines on inner surface, segments two, three, and four clothed with very short neat vestiture; ventral surface of metafemora with a fringe of erect, short to moderately long, fine setae (fig. 753); meso- and meta-femoral trichobothrial pattern as in figure 752 and 753; all tibiae with some reclining common setae; pro- and meso-tibiae with a few suberect black spines, without rows of tiny black spicules; metatibiae with more numerous suberect black spines of length slightly greater than tibial diameter, and with several rows of tiny black spicules.

Head elongate dorsoventrally, height below eye at least one-half height of eye (figs. 754, 756); weakly concave behind, generally obscuring anterior margin of pronotum, posterior margin of eye contiguous with anterior margin of pronotum (figs. 746, 747); head below eyes compressed laterally, buccal cavity elongate and nearly parallel-sided, gula elongate, nearly vertical, flattened and keel-like (figs. 755, 757); eyes from relatively small to moderately bulging, moderately to rather strongly emarginate at antennal insertion (figs. 754, 756); vertex usually more or less horizontal and rounded, sometimes declining anteriorly, posterior margin sharply to rather broadly rounded, nearly straight to weakly concave between eyes; antennal segment one relatively short, coke-bottle-shaped, length about equal to or less than width of vertex, segment two long more or less cylindrical, diameter greater than that of segment one, always somewhat curving, segments three and four very slender, subequal in diameter; labrum often flattened laterally (fig. 755); labium reaching to at least mesocoxae; pronotum trapezoidal, weakly to rather strongly sloping anteriorly, anterior margin in the form of a somewhat depressed, dorsally flattened collar about as wide as diameter of protibiae (fig. 749), lateral margins nearly straight to distinctly concave, posterior margin nearly straight; mesoscutum exposed by distance slightly less than diameter of antennal segment two, somewhat elevated and sloping laterally, separated from scutellum by a distinct, nearly straight impression; scutellum distinctly rounded transversely, gently sloping; hemelytra gently declining laterally, corial margin weakly but distinctly sinuous, not reflexed ventrally (figs. 745–747); cuneus relatively short and narrow, cuneal fracture weakly to rather strongly angled anteromesially, cuneal incisure obsolete to moderately deep; large cell of membrane more or less right angulate and sharply rounded postero-



FIGS. 745–747. *Gulacapsus* spp. 745. *G. moresbyana,* holotype. 746. *G. nondugl,* holotype. 747. *G. novoguinensis,* holotype.

mesially; metathoracic scent-gland evaporatory area as in figure 748; abdomen constricted basally at thoracic attachment, often broadened posteriorly; genital capsule small, occupying no more than one-fourth total length of abdomen, capsule sometimes forming a short spine posteromesially; pro- and meso-femora rather narrow, elongate rectangular, metafemora distinctly elongate, somewhat broadened mesially; pro- and meso-tibiae cylindrical, metatibiae sometimes flattened but only slightly broadened; metatarsal segments two and three subequal in length, segment one somewhat shorter; claws elongate, slender, weakly curving, only slightly broadened basally, pulvilli small, parempodia setiform and convergent apically (fig. 751).

MALE GENITALIA: Vesica relatively short, sigmoid, somewhat twisted, secondary gonopore apical, weakly to moderately developed, apex of vesica without sclerotized spines (fig. 758); phallotheca more or less L-shaped, elongate apically, more or less strongly attenuated (fig. 760); left paramere short, stocky, posterior process distinctly elevated, slender, moderately elongate (fig. 759).

FEMALE: Macropterus. Similar to male.

FEMALE GENITALIA: Not examined.

TYPE SPECIES: *Gulacapsus novoguinensis,* new species.

ETYMOLOGY: Named for the distinctive, flattened form of the gula; masculine.

DISTRIBUTION: Figure 744. New Guinea and northern Australia (see below).

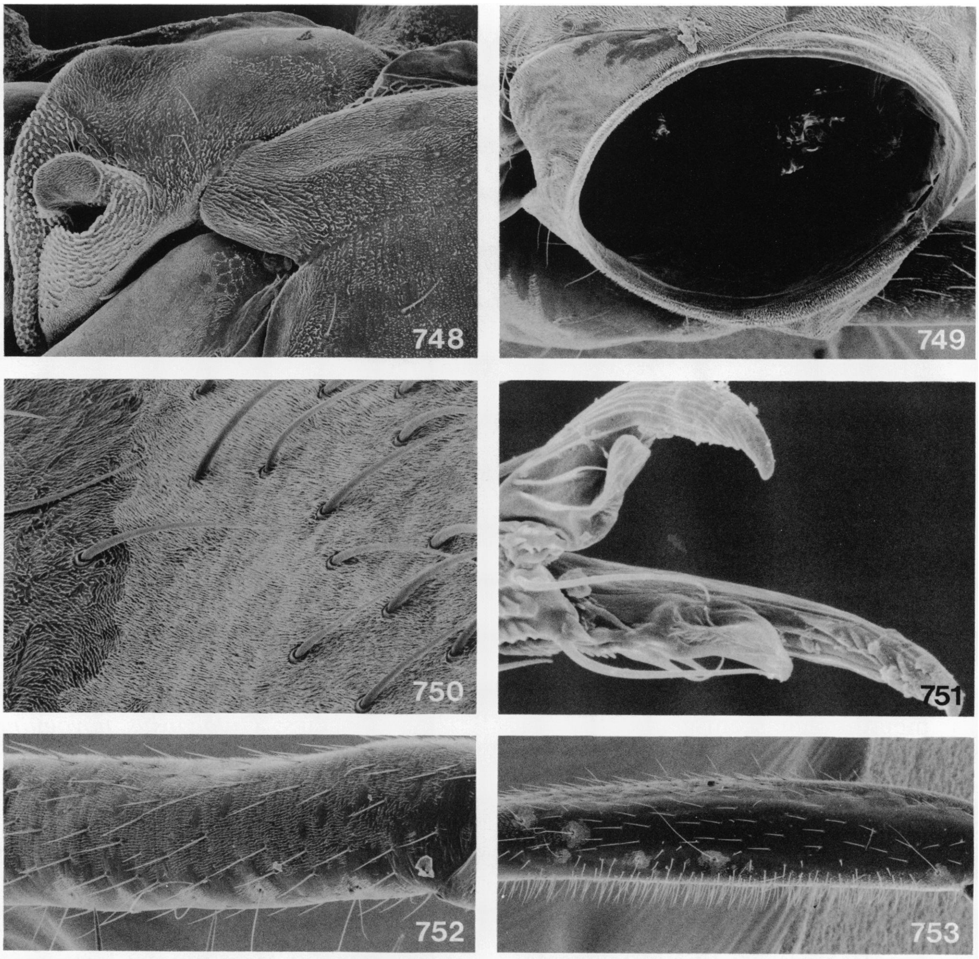
ADDITIONAL SPECIMENS: Two additional male and three female specimens, apparently representing at least two undescribed taxa, are available from New Guinea and Australia (Bishop): INDONESIA: *West Irian:* Fak Fak, 1♂. PAPUA NEW GUINEA: *Morobe Prov.:* Wau, 1♀. [*Prov. unknown*]: Ruka, 1♂. *Eastern Highlands Prov.:* Goroka, 1♀. *Morobe Prov.:* Ulap, 1♀. Two specimens (1♂, 1♀) of *Gulacapsus* are available from Balck Jungle, near Humpty-doo, Northern Territory, Australia.

Gulacapsus moresbyana, new species

Figures 744, 745, 754, 755

DIAGNOSIS: Recognized by the castaneous to nearly black, general coloration, the transverse fascia narrow and present only on the corium, the dark unicolorous cuneus, the posteriorly elevated and distinctly sloping pronotum, and the dimensions.

DESCRIPTION: Macropterous male. Rela-



FIGS. 748–753. *Gulacapsus* sp., ♀, Papua New Guinea, Eastern Highlands Prov., Goroka. 748. Lateral view of metathorax. 749. Pronotal collar. 750. Detail of surface of wing and setae at level of midpoint of claval commissure; light region on right pruinose. 751. Pretarsus. 752. Mesofemur, showing trichobothria. 753. Metafemur, showing trichobothria and fringe of erect setae on ventral surface.

tively stout-bodied, length apex tylus-cuneal fracture 2.39, width pronotum 0.94; general coloration castaneous to nearly black; narrow white transverse fascia on corium at level of apex of scutellum (fig. 745); metepisternum white posterodorsally; metacoxae and trochanters and apex of genital capsule yellowish.

Surface texture and vestiture as in generic description.

Height of head below eyes nearly equal to height of eye (fig. 754); eyes weakly bulging, distinctly emarginate at antennal insertion (fig. 754); vertex nearly horizontal, posterior margin rather broadly rounded and distinctly concave mesially; gula produced posteriorly as in figure 755; antennal segments three and four missing in holotype; labrum strongly flattened and broad (fig. 755); labium reaching to between meso- and meta-coxae; pronotum elevated posteriorly, rather steep declining anteriorly, lateral margins straight; cuneal incisure distinct, base of cuneus inset and rounded, cuneal fracture sinuous, weakly angled anteromesially; abdomen distinctly narrow basally and broadened posteriorly; genital capsule forming a short spine posteroventrally.

MALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Port Moresby, near the type locality.

DISTRIBUTION: Figure 744. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Central Prov.:* Daradee Plantation, 80 km. N to Port Moresby, 500 m., September 7, 1959, sweeping, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

Gulacapsus nondugl, new species

Figures 744, 746

DIAGNOSIS: Recognized by its mahogany-castaneous coloration, relatively large size, nearly complete yellow-white, transverse hemelytral fascia (fig. 746), basally light cuneus, steeply declivent pronotum, and declivent vertex.

DESCRIPTION: Macropterous male. Relatively large, length apex tylus-cuneal fracture 2.33, width pronotum 0.99; general coloration mahogany-castaneous, transverse fascia just posterior to apex of scutellum nearly complete, yellow-white, narrow mesially, broadening anteriorly (fig. 746); base of cuneus narrowly white; antennal segment three light basally (missing in holotype); metacoxae light distally; most of posterior margin of metepisternum white.

Surface texture and vestiture as in generic description.

Height of head below eye equal to one-half of height of eye, eyes not distinctly bulging, distinctly emarginate at antennal insertion; vertex rather strongly declining anteriorly, posterior margin sharply rounded, shallowly convexly angulate; gula elongate anteroposteriorly and projecting strongly toward prosternal xyphus; labrum not flattened laterally; labium reaching to apex of mesocoxae; pronotum elevated posteriorly and strongly declining anteriorly, lateral margins nearly straight; cuneal fracture rather strongly angled anteriomesially, cuneal incisure shallow, cuneus weakly curving basally; abdomen slightly enlarged posteriorly; genital capsule forming a short spinelike projection posteroventrally.

MALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 744. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Western Highlands Prov.:* Nondugl, 1600 m., July 8, 1955, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPE: PAPUA NEW GUINEA: [*Prov. unknown*]: Akivitana River, 1550 m., January 10, 1965 (J. and M. Sedlacek; Bishop), 1♂.

Gulacapsus novoguinensis, new species

Figures 744, 747, 756–760

DIAGNOSIS: Recognized by its distinctively slender body form (fig. 747), the castaneous to nearly black coloration, the transverse hemelytral fascia narrow and only on the corium, the dark unicolorous cuneus, and the weakly elevated and gently sloping pronotum.

DESCRIPTION: Macropterous male. Small, slender, length apex tylus-cuneal fracture 2.03, width pronotum 0.74; general coloration castaneous to nearly black; narrow yellow-white transverse fascia on corium at level just posterior to apex of scutellum (fig. 747); antennal segment one lateroventrally, antennal segment three proximally, meso- and meta-coxae distally, and all trochanters yellow-white.

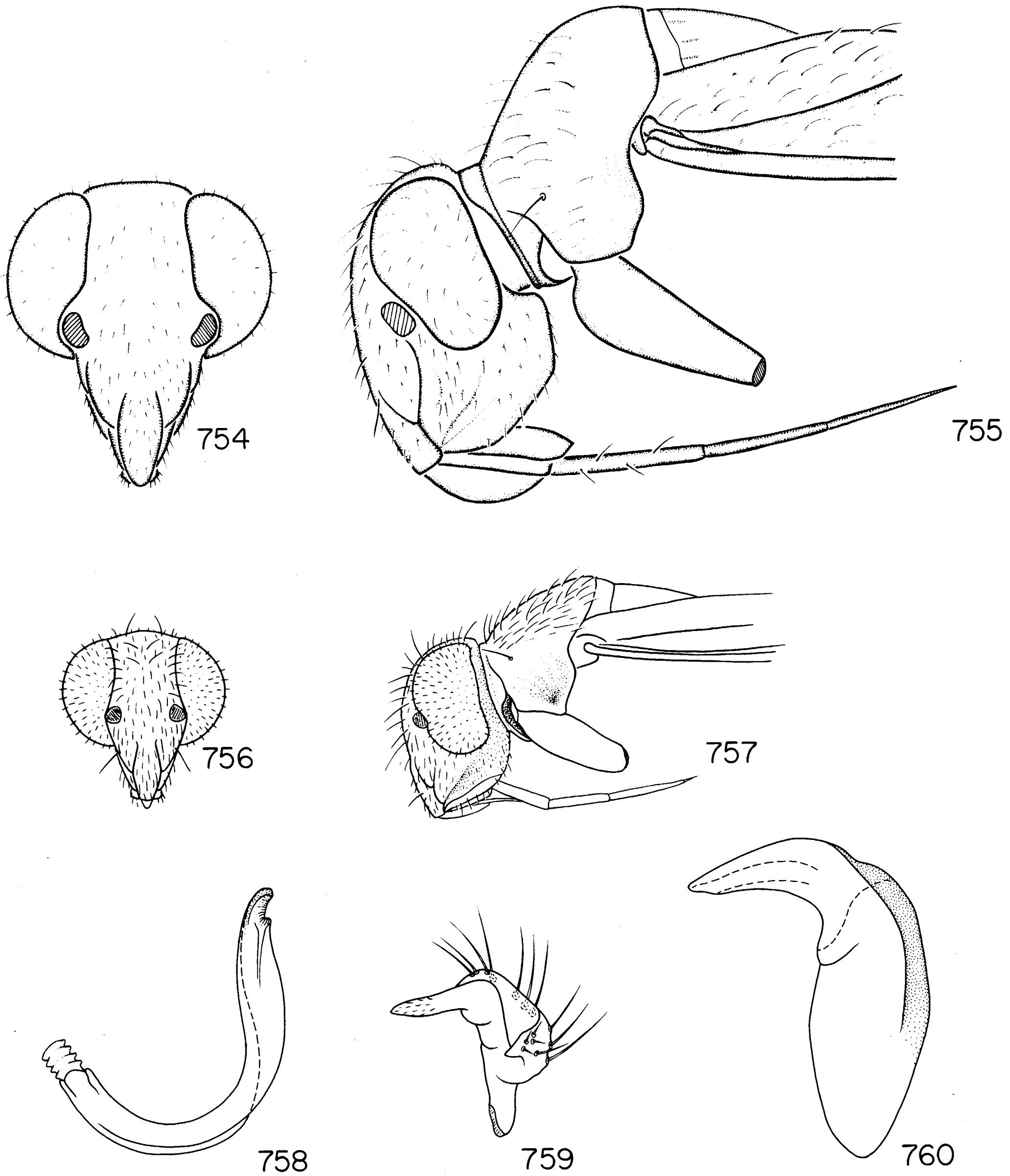
Surface texture and vestiture as in generic description.

Height of head below eyes equal to about one-half height of eye; eyes moderately bulging, distinctly emarginate at antennal insertion; vertex nearly horizontal, posterior margin broadly rounded and straight; gular area as in figure 757; labrum flattened, not very broad (fig. 757); labium not quite reaching to apex of mesocoxae; pronotum only weakly elevated and gently declining anteriorly, lateral margins weakly concave; cuneal fracture distinctly angled anteromesially, cuneal incisure shallow, cuneus only weakly inset and rounded basally; abdomen only slightly broadened posteriorly; genital capsule rounded and not forming spine posteroventrally.

MALE GENITALIA: Figures 758–760.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in New Guinea.



FIGS. 754–760. *Gulacapsus* spp. 754, 755. *G. moresbyana*. 754. Frontal view of head, ♂. 755. Lateral view of head and prothorax, ♂. 756–760. *G. novoguinensis*. 756. Frontal view of head, ♂. 757. Lateral view of head and prothorax, ♂. 758. Vesica. 759. Left paramere. 760. Phallotheca.

DISTRIBUTION: Figure 744. New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Hollandia-Binnen, 25 m., October 16, 1957, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: PAPUA NEW GUINEA: *Madang Prov.:* Wanuma, 600–720 m., August 1968 (Krauss; AMNH), 1♂. *Western Prov.:* Oriomo River, 3 m., August 4, 1964, light trap (H. Clissold; Bishop), 1♂.

PSEUDOHALLODAPOCORIS, NEW GENUS

DIAGNOSIS: Recognized by the antlike habitus, the form of the scent gland opening

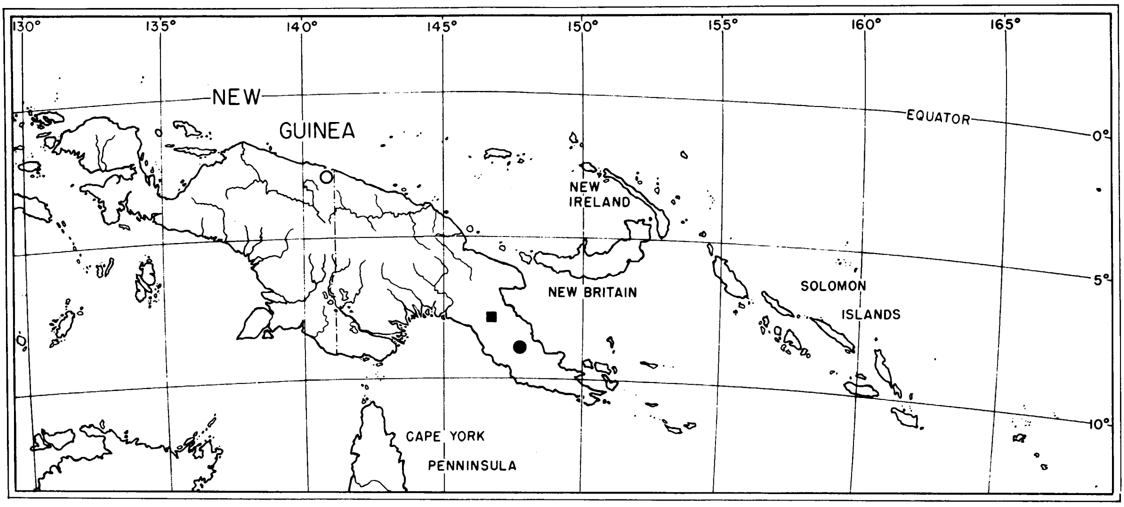
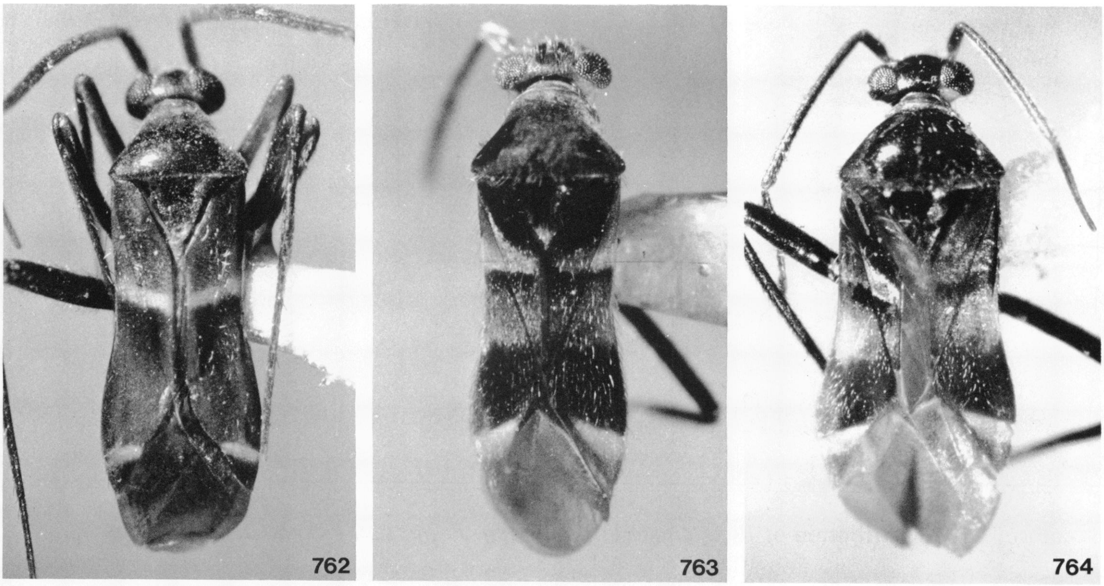


FIG. 761. Distribution of *Pseudohallodapocoris* spp. *P. ifar* (O); *P. kokoda* (●); *P. wau* (■).

which is straight with the anterior evaporatory area not overlapping the posterior area, the metafemora with a fringe of moderately long, erect, fine setae on the ventral surface, the posterior margin of the eyes at the level of the anterior margin of the pronotum but distinctly removed from it, the head weakly elongate below the eyes, the anterior margin of the pronotum flattened and collar-like, the posterior pronotal lobe weakly to strongly tumid, the base of the cuneus broadly white, and the corium and sometimes cuneus with a light fascia of variable placement.

DESCRIPTION: Macropterous male. Antlike, relatively small- to medium-sized, range apex tylus-cuneal fracture 2.04–2.52, range width pronotum 0.84–1.03; general coloration castaneous, hemelytra with a partial or complete light transverse fascia and pruinose area on corium and clavus just posterior to fascia, cuneus always broadly white at base; body surface smooth, hemelytra dull, mesoscutum sometimes polished and shining, head and pronotum ranging from dull pruinose to rather highly polished, dorsum covered with suberect or reclining brown common setae, posterior two-thirds of corium generally with subappressed, weakly flattened, golden shining setae; eyes with conspicuous interommatidial setae; antennal segment one with a few erect spines on interior surface; antennae with very short neat vestiture or more erect, longer vestiture of somewhat shaggy appearance; vertex and frons with at least two pairs of erect trichobothrium-like setae; anterolateral angles of pronotum with an erect slender spine; ventral surface of metafemora with a fringe of erect, rather short fine setae (as in fig. 753); all tibiae with numerous reclining light simple setae and some suberect spines about as long as tibial diameter; pro- and meso-femora without rows of tiny black spicules, metafemora with several rows.

Head weakly elongate dorsoventrally, height below eyes equal to about one-third of height of an eye (figs. 768–771); head not concave behind and not obscuring anterior margin of pronotum (figs. 762–764); head in dorsal view transverse, rectangular, frons more or less flat and not projecting beyond anterior margin of eyes (figs. 762–764); vertex longitudinally rounded and flattened and distinctly sloping anteriorly, posterior margin rounded, sometimes very broadly, straight or weakly concave between eyes, usually somewhat elevated above level of anterior margin of pronotum; posterior margin of eyes more or less perpendicular to longitudinal axis of body, distinctly removed laterally from anterior margin of pronotum (figs. 762–764); gula moderately long, sloping, slightly depressed, buccal cavity elongate oval, broadest anteriorly; eyes weakly to moderately emarginate at antennal insertion (figs. 768, 770);



FIGS. 762–764. *Pseudohallodapocoris* spp. 762. *P. ifar,* holotype. 763. *P. kokoda,* holotype. 764. *P. wau,* holotype.

antennae inserted just above ventral margin of eyes (figs. 768, 770), antennal segment one coke-bottle-shaped, length variable, segment two long, cylindrical, of nearly uniform diameter over entire length, diameter slightly less than that of segment one, weakly curving, segments three and four about one-half diameter of segment two; labium reaching to apex of mesocoxae; pronotum distinctly elevated posteriorly, posterior lobe moderately swollen to distinctly tumid, anterior lobe usually somewhat narrowed, anterior margin flattened, broadly collar-like, collar dorsally sometimes only vaguely demarcated from remainder of pronotum, lateral margins somewhat concave, posterior margin straight to weakly concave and angulate, posterolateral angles broadly to rather sharply rounded; mesoscutum exposed by distance slightly greater than diameter of antennal segment two, declining posteriorly and laterally, separated from scutellum by a finely impressed sinuous line; scutellum somewhat elevated and transversely rounded; hemelytra gently sloping laterally, weakly to distinctly sinuous laterally, broadest just anterior to cuneal incisure, corial margin reflexed ventrally on anterior one-third and largely obscured by endocorium; cuneal fracture weakly angled anteromesially, cuneal incisure very shallow or obsolete; large cell of membrane right-angled and sharply rounded posteromesially; scent gland opening distinctive, anterior lobe not overlapping posterior evaporatory area, more or less erect and dorsoventral in orientation; abdomen narrow, sometimes broadened posteriorly, genital capsule small, occupying no more than one-fourth of abdominal length; all femora elongate, slender, more or less rectangular; tibiae either cylindrical or weakly flattened, sometimes of noticeably decreased diameter distally; metatarsal segments two and three subequal in length, segment one much shorter; claws moderately long, slender, slightly broadened at base, pulvilli small, parempodia setiform.

MALE GENITALIA: Vesica relatively short, sigmoid, somewhat twisted, secondary gonopore apical, moderately well developed and sclerotized (fig. 765); phallotheca L-shaped, elongate distally (fig. 767); left paramere short, stocky, posterior process elevated, elongate, bladelike (fig. 766).

FEMALE: Unknown.

TYPE SPECIES: *Pseudohallodapocoris ifar,* new species.

ETYMOLOGY: Named for its superficial resemblance to *Hallodapus*; masculine.

DISTRIBUTION: Figure 761. New Guinea.

Pseudohallodapocoris ifar, new species
Figures 761, 762, 765–767

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the completely dull dorsum, the complete, parallel-sided, yellow-white transverse hemelytral fascia posterior to the apex of the scutellum, the form of the head, the dimensions, and the structure of the male genitalia (figs. 765–767).

DESCRIPTION: Macropterous male. Medium-sized, length apex tylus-cuneal fracture 2.52, width pronotum 0.92; general coloration dull castaneous, hemelytra with a complete, parallel-sided yellow-white transverse fascia just anterior to midpoint of claval commissure (fig. 762), slightly wider than diameter of antennal segment two; cuneus white on basal one-third; antennal segment one laterally, metacoxae distally, all trochanters, protibiae distally, and all tarsi yellow-white.

Body surface, including mesoscutum dull, sometimes vaguely pruinose; antennae with very short, erect, subappressed vestiture.

Structure as in generic description except as follows: vertex longitudinally rounded, weakly sloping anteriorly, posterior margin very broadly rounded, weakly elevated above anterior margin of pronotum, more or less straight across; eyes moderately emarginate at antennal insertion, antennal fossae contiguous with anterior margin of eyes; pronotum with collar-like anterior margin weakly demarcated from anterior lobe, posterior lobe moderately elevated and swollen, not tumid, posterior margin weakly concavely angulate across mesoscutum, posterolateral angles rather sharply rounded; costal margin of hemelytra rather strongly sinuous; abdomen slightly broadened posteriorly; meso- and meta-tibiae weakly flattened, tapering towards apex.

MALE GENITALIA: Figures 765–767.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 761. Western New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Cyclops Mountains, Ifar, 300 m., June 22, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

Pseudohallodapocoris kokoda, new species
Figures 761, 763, 768, 769

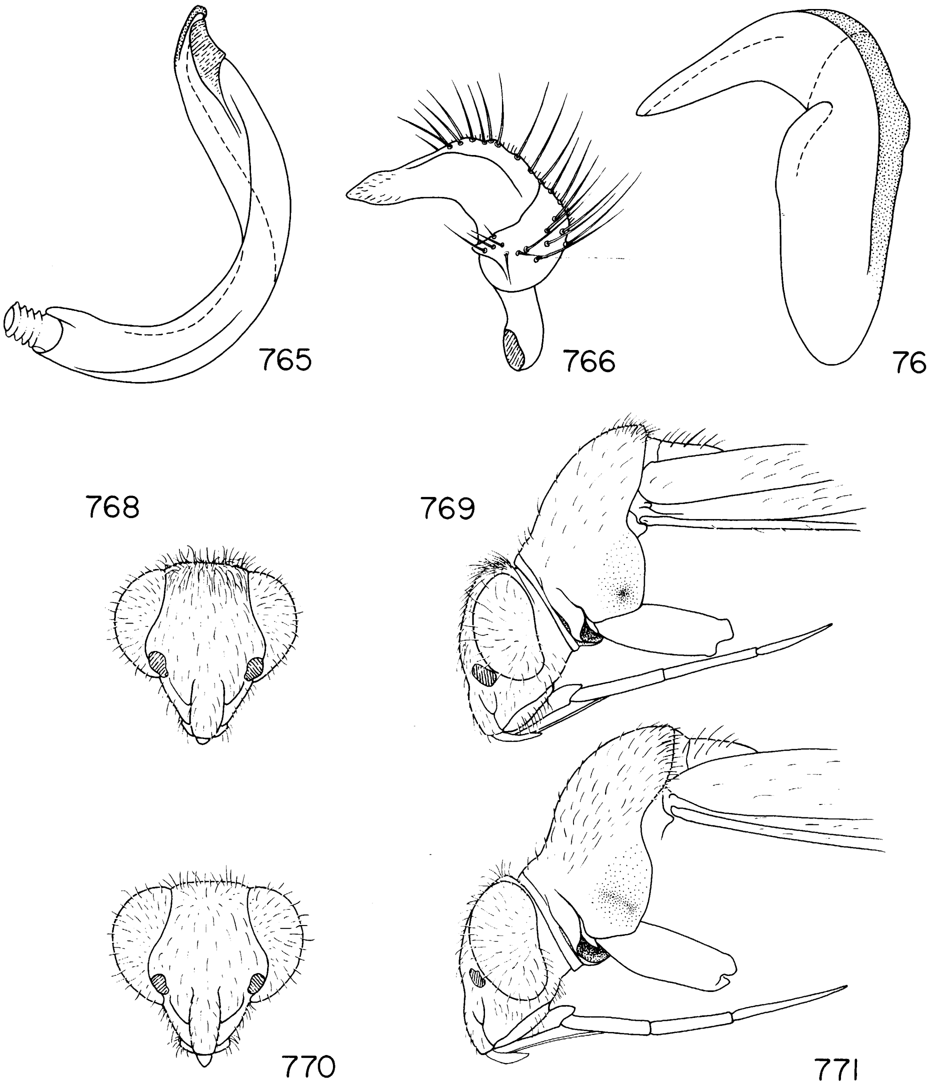
DIAGNOSIS: Recognized by the characters in the generic diagnosis, the incomplete white fascia on the corium in conjunction with an adjacent pruinose area on the clavus, the sloping vertex, and the dimensions.

DESCRIPTION: Macropterous male. Relatively small, length apex tylus-cuneal fracture 2.04, width pronotum 0.84; general coloration castaneous, head and pronotum very dark, posterior portion of hemelytra distinctly lighter; corium at level of apex of scutellum broadly white, adjacent clavus pruinose, giving appearance of complete light fascia (fig. 763); basal one-half of cuneus white; mesotibiae yellow-white on distal one-third, metalegs, including trochanters, missing in holotype.

Body surface dull, except mesoscutum highly polished; anterior lobe of pronotum, apex of scutellum, clavus just posterior to apex of scutellum, corium and clavus very broadly just anterior to apex of claval commissure, pruinose; antennal vestiture slightly shaggy.

Structure as in generic description except as follows: vertex weakly rounded longitudinally, rather strongly declining anteriorly, posterior margin broadly rounded laterally, more sharply mesially, more or less straight across, impressed behind, slightly elevated above but not obscuring anterior margin of pronotum; eyes moderately emarginate at antennal insertion, antennal fossae contiguous with anterior margin of eyes (fig. 768); pronotum with collar-like anterior margin weakly demarcated from anterior lobe, posterior lobe moderately elevated and swollen, not distinctly tumid, posterior margin weakly concavely angulate across mesoscutum, posterolateral angles sharply rounded; costal margin of hemelytra weakly sinuous; abdomen nearly parallel-sided; pro- and meso-tibiae cylindrical, protibiae of uniform diameter, mesotibiae decreasing in diameter distally, metatibiae missing in holotype.

MALE GENITALIA: Not examined.



FIGS. 765–771. *Pseudohallodapocoris* spp. 765–767. *P. ifar.* 765. Vesica. 766. Left paramere. 767. Phallotheca. 768, 769. *P. kokoda.* 768. Frontal view of head, ♂. 769. Lateral view of head and prothorax, ♂. 770, 771. *P. wau.* 770. Frontal view of head, ♂. 771. Lateral view of head and prothorax, ♂.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality; a noun in apposition.

DISTRIBUTION: Figure 761. Papua New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Northern Prov.:* Kokoda, 400 m., March 22, 1956, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

Pseudohallodapocoris wau, new species

Figures 761, 764, 770, 771

DIAGNOSIS: Recognized by the characters given in the generic diagnosis, the polished tumid pronotum, the exocorium broadly light at the level of the apex of the claval commissure, and the dimensions.

DESCRIPTION: Macropterous male. Relatively large, length apex tylus-cuneal fracture 2.27, width pronotum 1.03; general coloration castaneous; exocorium broadly light just anterior to apex of claval commissure; basal one-half of cuneus yellow-white; pro- and meso-legs missing in holotype; apex of metatibiae and metatarsi yellow-white; base of abdomen yellow-white.

Head, posterior lobe of pronotum, and mesoscutum polished; pronotal collar and very limited anterior lobe of pronotum granular and dull; clavus at level of apex of scutellum and corium at level of light area weakly pruinose; antennal vestiture short, neat, subappressed.

Structure as in generic description except as follows: vertex weakly rounded longitudinally, rather strongly declining anteriorly, posterior margin sharply rounded, weakly concave between eyes, impressed behind, and elevated above but not obscuring anterior margin of pronotum; eyes moderately emarginate above antennal insertion, antennal fossae contiguous with anterior margins of eyes (fig. 770); pronotal collar weakly rounded dorsally, distinctly demarcated from anterior pronotal lobe; posterior pronotal lobe strongly elevated and tumid, posterior margin nearly straight, posterolateral angles broadly rounded; costal margin of hemelytra rather strongly sinuous; width of abdomen increasing slightly posteriorly; metatibiae weakly flattened, distinctly narrowed distally.

MALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality. A noun in apposition.

DISTRIBUTION: Figure 761. Papua New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Morobe Prov.:* Wau, 1250 m., April 12, 1965, malaise trap, J. Sedlacek collector; deposited in the B. P. Bishop Museum, Honolulu.

PSEUDOLEUCOPHOROPTERA, NEW GENUS

DIAGNOSIS: Recognized by its relatively large size, moderately antlike in appearance, complete transverse light fascia anteriorly on the hemelytra, metafemora with a fringe of moderately long, erect, fine setae ventrally, very long second antennal segment about two times as long as width of head, the head concave behind and partially obscuring the anterior margin of the pronotum, the anterior margin of the pronotum not collar-like, and the form of the male genitalia.

DESCRIPTION: Macropterous male. Antlike, relatively large, range length apex tylus-cuneal fracture 2.66–3.02, range width pronotum 0.94–1.07; general coloration castaneous with much pruinosity giving a grayish appearance; hemelytra just posterior to level of apex of scutellum with a complete, dull white, mesially tapering fascia (figs. 773, 774); base of cuneus contrasting white or not; posterior margin of metepisternum white; dorsal surface generally smooth, dull to weakly shining, with rather large weakly pruinose areas; dorsum with suberect or reclining brown common setae and some slightly flattened, recumbent, golden shining setae on corium and clavus; interior surface of antennal segment one with at least one short spine; antennae with very short, neat, subappressed vestiture; anterolateral angles of pronotum with an erect spine; ventral surface of metafemora with a fringe of erect, rather short, fine setae (fig. 776); all tibiae with reclining simple setae and some suberect black spines; pro- and mesotibiae without rows of tiny spicules, metatibiae with several rows (fig. 777).

Head transverse in dorsal view, eyes weakly to rather strongly protruding laterally (figs. 773, 774, 780); frons weakly depressed between eyes; head concave behind, partially or almost completely obscuring anterior margin of pronotum; vertex rather strongly declining anteriorly, posterior margin more or less erect, weakly concave between eyes, sharply rounded; in lateral view length of head below eyes varying from about one-third of height of eye to slightly more than one-half the height of an eye (fig. 781); genae just behind lora sometimes forming a low, rounded carina (fig. 781); buccal cavity very elongate oval; genae narrow to broad, sometimes depressed; gula very short to rather long, vertical (fig. 781); labium reaching from meso- to meta-coxae; antennae inserted about one-third distance above ventral margin of eyes; eyes moderately emarginate at antennal insertion, antennal fossa nearly contiguous with margin of eyes

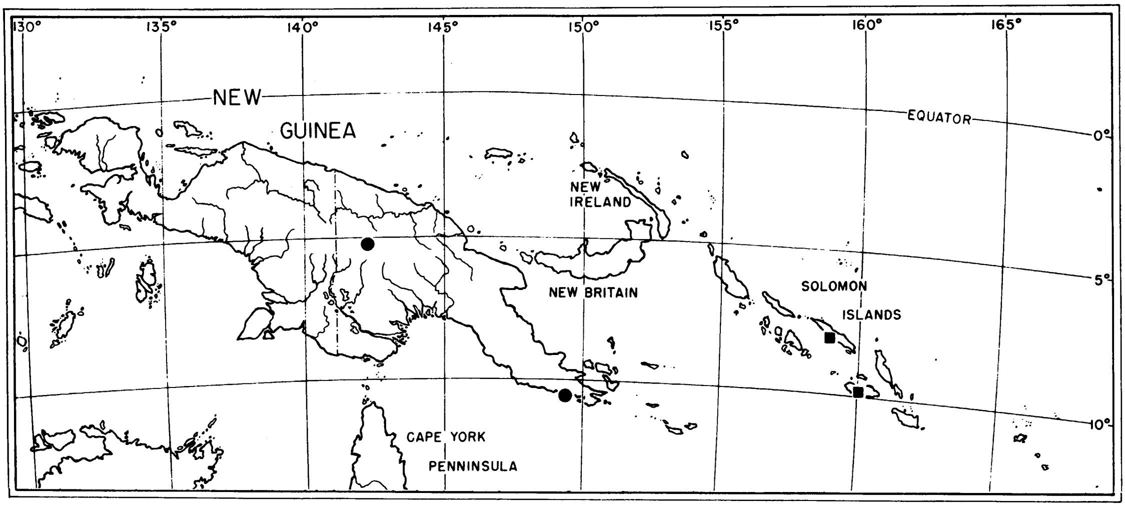


FIG. 772. Distribution of *Pseudoleucophoroptera* spp. *P. mamai* (●); *P. promeceops* (■).

(fig. 780); antennal segment one coke-bottle-shaped, relatively elongate, segment two very long, about two times as long as width of head, slightly flattened, generally of diameter slightly greater than that of segment one, distinctly curving, segments three and four very slender, subequal in diameter; shape of pronotum variable, ranging from broad posteriorly to more or less elongate, at most only weakly elevated posteriorly, anterior margin slightly depressed, finely carinate and upturned; mesoscutum more or less broadly exposed; scutellum weakly to moderately rounded transversely; hemelytra nearly flat to moderately declining laterally, lateral margins weakly to distinctly sinuous, exposed over entire length in dorsal view and not reflexed ventrally; cuneal fracture and cuneus variable; abdomen narrow basally and narrowly attached to thorax, somewhat broadened posteriorly, genital capsule small, occupying from one-fifth to one-fourth of total length of abdomen, with a distinct spinelike projection posteroventrally; all femora long and relatively slender, either rectangular or somewhat tapering distally; pro- and mesotibiae cylindrical, metatibiae sometimes distinctly flattened; metatarsal segments two and three subequal in length, segment one distinctly shorter; claws elongate, slender, slightly broadened at base, pulvilli small, inconspicuous, parempodia setiform.

MALE GENITALIA: Vesica of moderate length, sigmoid, weakly twisted, secondary gonopore subapical, noticeably developed and sclerotized (fig. 782); phallotheca L-shaped, broad distally (fig. 784); left paramere short, stocky, posterior process strongly elevated, anterior process reduced and short (fig. 783).

FEMALE: See *Pseudoleucophorptera promeceops.*

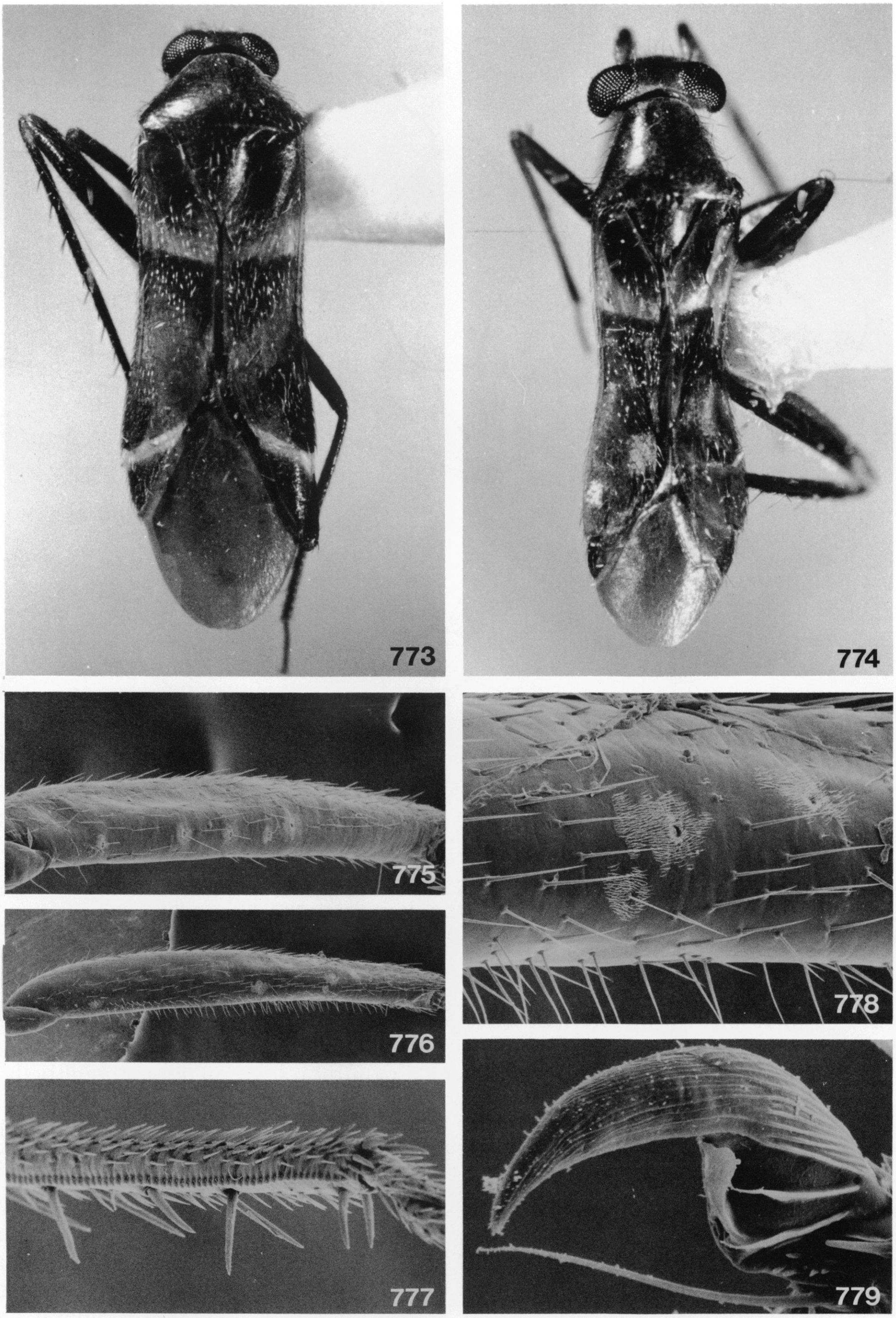
FEMALE GENITALIA: Not examined.

TYPE SPECIES: *Pseudoleucophoroptera promeceops,* new species.

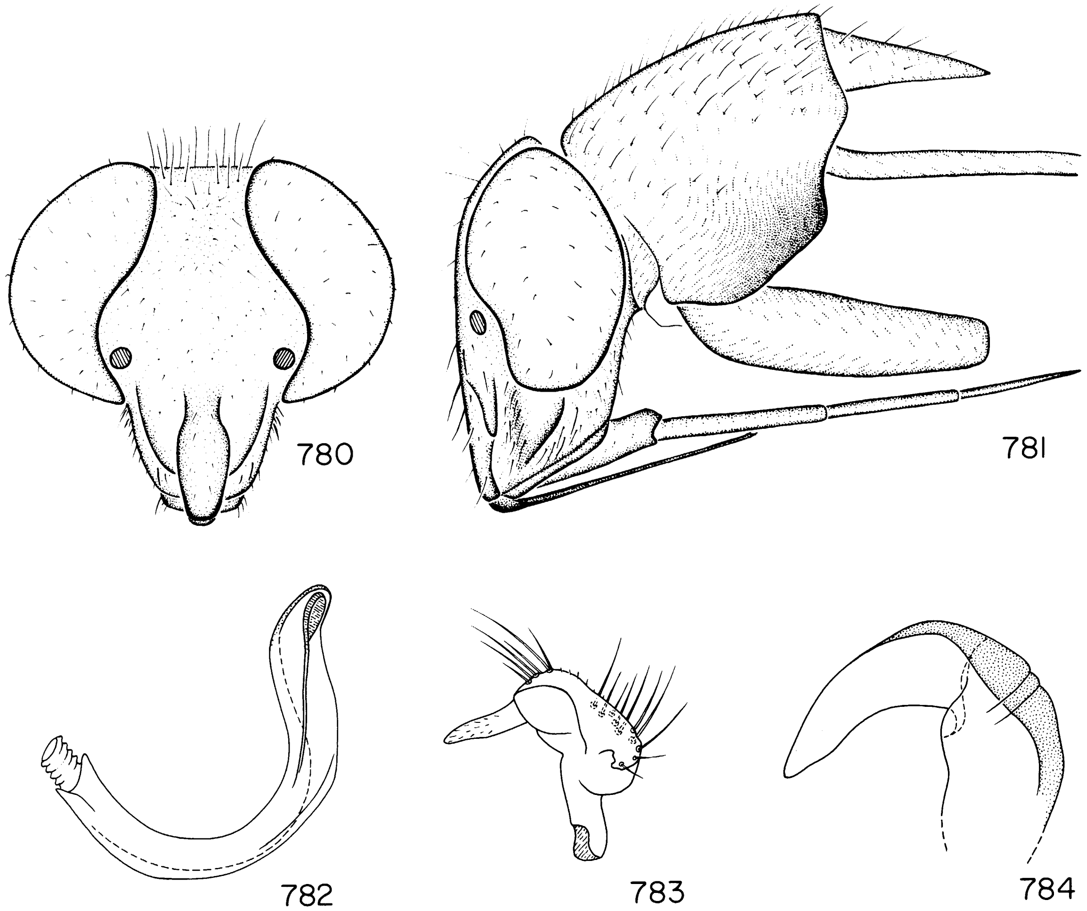
ETYMOLOGY: Named for its superficial resemblance to *Leucophoroptera fasciatipennis* Poppius.

DISTRIBUTION: Figure 772. New Guinea and the Solomon Islands.

DISCUSSION: Although superficially resembling *Leucophoroptera fasciatipennis* Poppius, *Pseudoleucophoroptera* species are distinct from that taxon in their possession of a fringe of erect setae ventrally on the metafemora in common with *Gulacapsus, Pseudohallodapocoris,* and *Trichocephalocapsus.* The two included species differ conspicuously in the structure of the head, pronotum, and hemelytra, but are held together by the very long second antennal segment. Because they are the only taxa known with the fringe of erect setae on the metafemora that do not possess a flattened pronotal collar, I have placed them in the same genus despite their



FIGS. 773–779. *Pseudoleucophoroptera* spp. 773. *P. mamai,* holotype. 774. *P. promeceops,* holotype. 775–779. *P. mamai.* 775. Mesofemur, showing trichobothria. 776. Metafemur, showing trichobothria and fringe of erect setae on ventral surface. 777. Detail of metatibia showing row of spicules. 778. Detail of trichobothria of metafemur. 779. Outer surface of claw and parempodium.



FIGS. 780–784. *Pseudoleucophoroptera* spp. 780, 781. *P. promeceops.* 780. Frontal view of head, ♂. 781. Lateral view of head and prothorax, ♂. 782–784. *P. mamai.* 782. Vesica. 783. Left paramere. 784. Phallotheca.

differences, and despite the apparent absence of any unique characters both possess.

Pseudoleucophoroptera mamai,
new species

Figures 772, 773, 775–779, 782–784

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the short face below the eyes, the posteriorly broadened pronotum, the long, basally white cuneus, the dimensions, and the form of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 2.70, width pronotum 1.07; basal one-third of cuneus white; cuneus posterior to apex of scutellum at transverse fascia and posterior one-third of corium pruinose (fig. 773).

Common setae on dorsum relatively short, reclining.

Eyes only weakly protruding in dorsal view; head almost completely obscuring anterior margin of pronotum; height of head below eyes in lateral view one-fifth of height of eye; genae about as wide as diameter of antennal segment two, ecarinate; gula very short; labium reaching to apex of metacoxae; pronotum broadened posteriorly, lateral margins straight, distinctly converging anteriorly, posterior margin weakly concave across mesoscutum, posterolateral angles broadly rounded (fig. 773); mesoscutum exposed by a distance slightly greater than diameter of antennal segment two, declining laterally, separated from scutellum by a finely impressed weakly sinuous line; scutellum weakly rounded transversely; hemelytra moderately declining laterally, lateral margins weakly sinuous, narrowest at level of midpoint of claval commissure; cuneal fracture more or less straight, weakly angled anteromesially, cuneal incisure very shallow, cuneus relatively long; large cell of membrane forming a distinct, slightly oblique angle posteromesially; metatibiae cylindrical, not flattened.

MALE GENITALIA: Figures 782–784.

FEMALE: Unknown.

ETYMOLOGY: Named for the type locality.

DISTRIBUTION: Figure 772. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Central Prov.:* Mamai Plantation E of Port Glasgow, 150 m., February 13, 1965, R. Straatman collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 1♂. PAPUA NEW GUINEA: *Southern Highlands Prov.:* 40 km. W of Tari, 1650 m., September 19, 1963, light trap (R. Straatman; AMNH), 1♂.

Pseudoleucophoroptera promeceops, new species

Figures 772, 774, 780, 781

DIAGNOSIS: Recognized by the characters in the generic diagnosis, the long face below the eyes with a carina-like ridge running from ventral margin of the eye to the apex of the tylus (figs. 780, 781), the pronotum only slightly broadened posteriorly, the relatively short unicolorous cuneus, and the dimensions.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 3.02, width pronotum 0.94; cuneus castaneous, unicolorous; clavus just posterior to apex of scutellum and posterior two-fifths of corium weakly pruinose.

Common setae on dorsum rather long and suberect.

Eyes rather strongly bulging laterally in dorsal view; posterior margin of head partially obscuring anterior margin of pronotum; height of head below eyes in lateral view equal to one-half height of an eye; genae behind lora in the form of a low, smoothly rounded carina, genae behind carina weakly depressed; gula vertical, about twice as long as diameter of antennal segment two (fig. 781); labium reaching to apex of mesocoxae; pronotum weakly elongate, distinctly rounded transversely, lateral margins nearly straight, only weakly converging anteriorly, posterior margin shallowly but distinctly concave across mesoscutum, posterolateral angles rather sharply rounded; mesoscutum exposed (fig. 774), distinctly declining posteriorly and laterally, transversely rounded, separated from scutellum by a finely impressed V-shaped line; hemelytra nearly flat, lateral margin distinctly sinuous, narrowest just posterior to midpoint of claval commissure; cuneal fracture sinuous, cuneal incisure distinct; cuneus inset basally, rounded laterally, rather short and narrow (fig. 774); large cell of membrane very broadly rounded posteromesially; metatibiae distinctly flattened, broadest just distad tibiofemoral articulation.

MALE GENITALIA: Not examined.

FEMALE: Macropterous. Eyes smaller than in male, vertex relatively wider, face below eyes relatively longer, carina on genae more pronounced.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Greek, *promeces,* elongate, and *ops,* face.

DISTRIBUTION: Figure 772. Solomon Islands.

HOLOTYPE ♂: SOLOMON ISLANDS: *SE Santa Ysabel:* Tatamba, 0–50 m., September 8, 1964, light trap, R. Straatman collector; deposited in B. P. Bishop Museum, Honolulu.

ADDITIONAL SPECIMEN: SOLOMON ISLANDS: *Guadalcanal:* Gold Ridge-Suta (Jonapau), 1100 m., June 26, 1956 (Gressitt; Bishop), 1♀.

TRICHOCEPHALOCAPSUS, NEW GENUS

DIAGNOSIS: Recognized by the antlike habitus, the head weakly necklike behind the eyes with the eyes distinctly removed from the anterior margin of the pronotum (fig. 796),

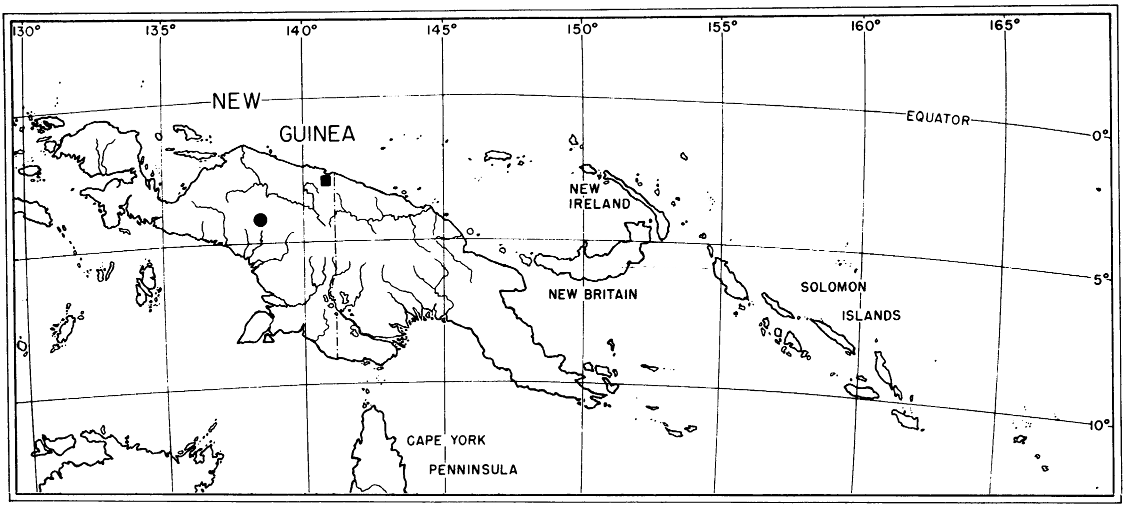
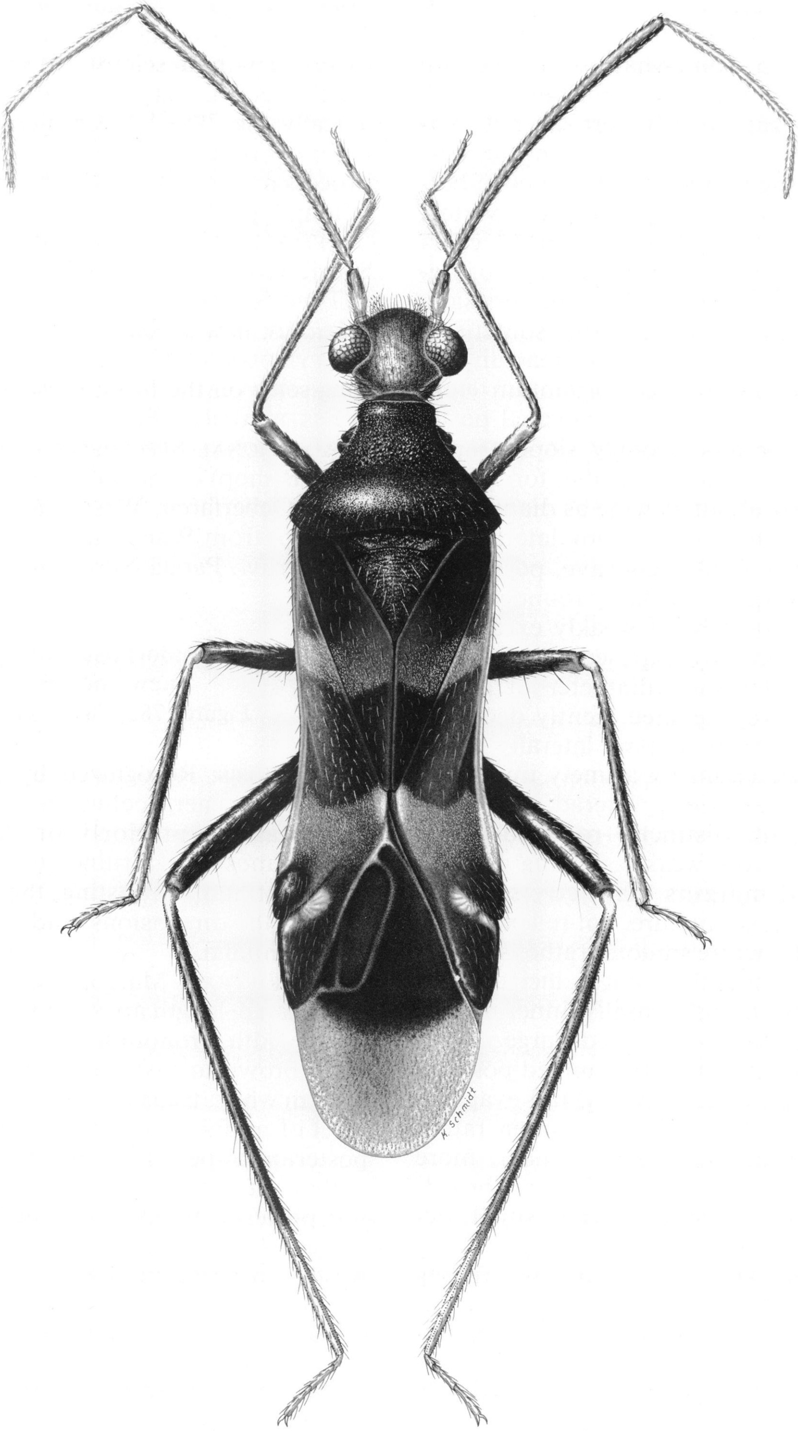


FIG. 785. Distribution of *Trichocephalocapsus albofasciatus* (●) and *T. immaculatus* (■).

the head dorsoventrally elongate with the height below the eye about equal to the height of an eye (fig. 796), the gula elongate but not keel-like, the head, especially the genae and gula, rather densely covered with erect dark setae (fig. 796), the anterior margin of the pronotum in the form of a broad flat collar, at least the corium with a light transverse fascia at the level of the apex of the scutellum, the cuneus sometimes contrastingly light basally, the membrane adjacent to the cuneus unicolorous with the cuneus, posteriorly much lighter and at most weakly smoky (figs. 786, 787), the metafemora with a fringe of moderately long, erect, fine setae ventrally (fig. 793), the claws long, slender and slightly broadened basally, and the genital capsule very small, occupying about one-fifth of the length of the abdomen.

DESCRIPTION: Macropterous male. Antlike, relatively large, elongate, range length apex tylus-cuneal fracture 2.68–2.90, range width pronotum 0.88–1.01; general coloration brown to black, corium with costal vein white and with a contrasting light transverse fascia at level of apex of scutellum (figs. 786, 787); base of cuneus sometimes contrastingly light; membrane at level of cuneus unicolorous with cuneus, at most weakly smoky and translucent or transparent posterior to apex of cuneus (figs. 786, 787); body surface smooth, dull, hemelytra at level of apex of scutellum and anterior to cuneal fracture pruinose; head, especially genae and gula, densely covered with rather long, erect, dark setae; pronotum with suberect and reclining simple setae and an erect spine just behind the collar laterally; scutellum with some erect simple setae; hemelytra with recumbent very weakly flattened, shining, golden setae; antennal segment one with a few slender, erect, dark spines on interior surface, segments two, three, and four clothed with short, neat, recumbent vestiture; metafemora with a fringe of erect fine setae on ventral surface; meso- and metafemoral trichobothrial patterns as in figures 791–793; metafemora with tufts of spicules proximally (fig. 794); all tibiae with reclining simple setae and some nearly erect slender spines about as long as tibial diameter; pro- and meso-tibiae with a row of tiny black spicules on dorsal and ventral surfaces, metatibiae with several rows.

Head elongate dorsoventrally, height below eyes about equal to or slightly greater than the height of eye, exserted, weakly necklike behind eyes, eyes removed from anterior margin of pronotum by distance somewhat greater than diameter of antennal segment two (fig. 796); eyes relatively small, some-



FIGS. 786. *Trichocephalocapsus albofasciatus.*

what bulging laterally, anterior margins moderately emarginate at antennal insertion, antennae inserted somewhat above ventral margin of eyes (figs. 795, 796); genae broad, flat, gula elongate, nearly vertical, not carinate (fig. 796), buccal cavity elongate, parallel-sided; antennal segment one coke-bottle-shaped, about as long as width of vertex, antennal segment two long, cylindrical, curving, diameter slightly greater than that of segment one, segments three and four very slender, subequal in diameter; labrum sometimes compressed laterally; labium reaching to about apex of mesocoxae; pronotum elongate, moderately to strongly elevated posteriorly, more or less strongly sloping anteriorly, anterior margin in the form of a flattened collar about as wide as diameter of antennal segment two (fig. 796), lateral margins sometimes weakly concave, posterolateral angles sharply to broadly rounded, posterior margin straight or weakly excavated; mesoscutum broadly exposed, by distance distinctly greater than diameter of antennal segment two, elevated, gently declining posteriorly, strongly sloping laterally, separated from scutellum by a finely impressed line curving posteriorly laterad; scutellum relatively small, distinctly rounded transversely; hemelytra weakly sloping laterad; lateral corial margins distinctly sinuous, broadest at cuneal fracture, not reflexed ventrally, cuneal fracture sinuous, rather strongly angled anteromesially, cuneal incisure obsolete; cuneus not inset basally, inner margin sometimes distinctly rounded; large cell of membrane often distinctly rounded posteromesially; metathoracic scent-gland evaporatory area as in figure 788; abdomen rather narrowly attached to thorax, slender, more or less parallel sided basally, distinctly broadened posteriorly; genital capsule small, occupying only about one-fifth of length of abdomen, slightly and rather bluntly protruding posteroventrally; all femora distinctly elongate, more or less rectangular in shape, weakly tubular; pro- and meso-tibiae more or less cylindrical, metatibiae weakly to distinctly flattened; metatarsal segments one and two subequal in length, segment one much shorter; claws elongate, slender, gently curving, slightly broadened basally, pulvilli small, parempodia setiform (fig. 790).

MALE GENITALIA: Vesica elongate, sinuous, twisted, secondary gonopore moderately developed, sclerotized, subapical, apex of vesica without sclerotized spines (fig. 797); phallotheca L-shaped, moderately elongate apically; (fig. 799); left paramere short, stocky, anterior process relatively long, posterior process moderately elevated, only moderately long (fig. 798).

FEMALE: Macropterus. See Additional Specimens.

TYPE SPECIES: *Trichocephalocapsus albofasciatus,* new species.

ETYMOLOGY: Named for the conspicuous long setae on the head; masculine.

DISTRIBUTION: Figure 785. New Guinea.

ADDITIONAL SPECIMENS: One male specimen (Bishop) is known from Bodem, 11 km. SE of Oeberfaren, West Irian, and a female (Bishop) from Wanuma, Adelbert Mts., Madang Prov., Papua New Guinea.

Trichocephalocapsus albofasciatus,
new species

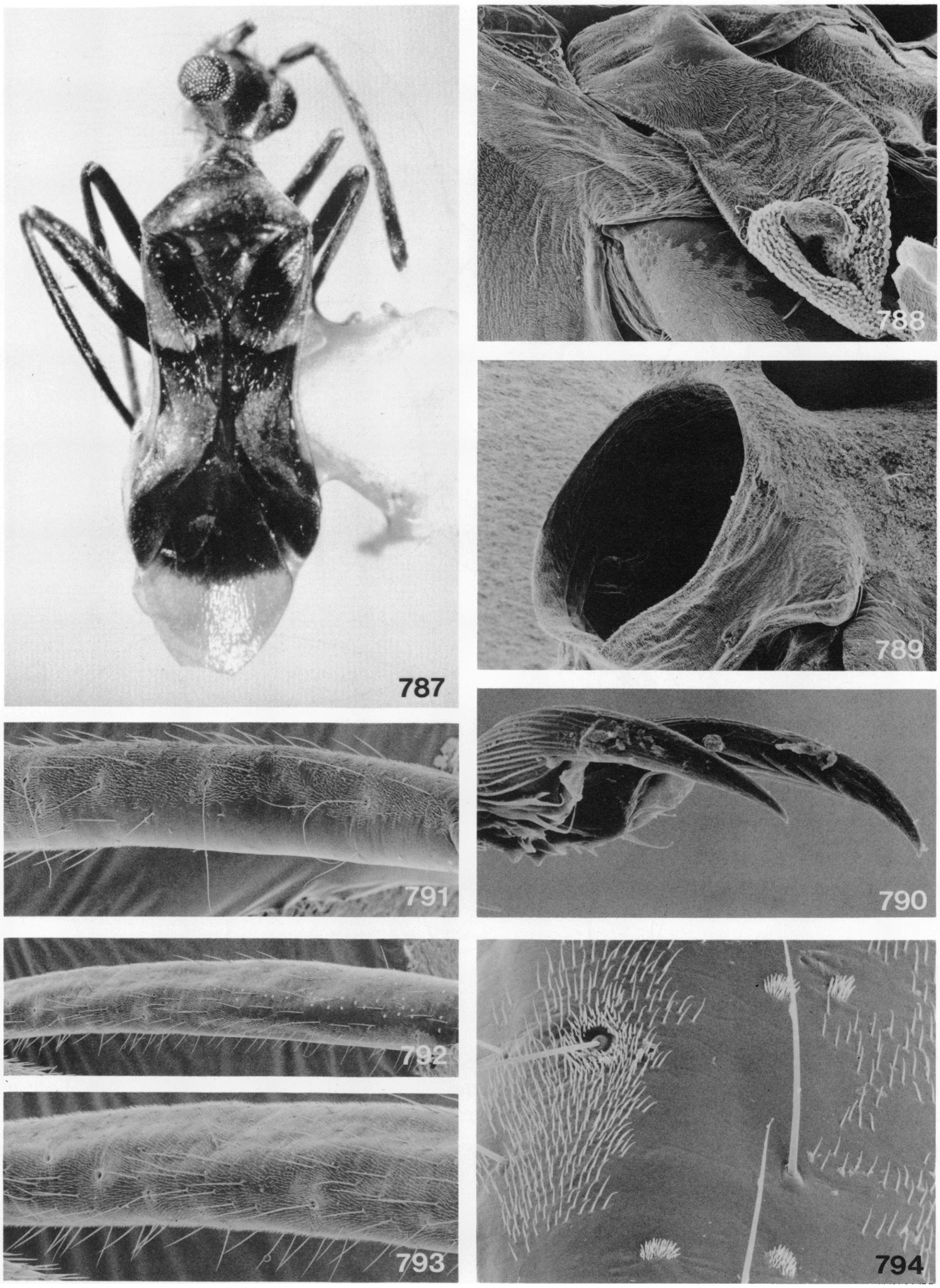
Figures 785, 786, 788–799

DIAGNOSIS: Recognized by the brown to castaneous general coloration, the light transverse fascia anteriorly or the hemelytra formed mostly by pruinosity, the tibiae distally light and contrasting, the basally white cuneus, the dimensions, and the form of the male genitalia.

DESCRIPTION: Macropterous male. Relatively large, length apex tylus-cuneal fracture 2.82, width pronotum 0.99; general coloration brown to castaneous, costal margin of corium white, translucent, corium anterior to level of midpoint of claval commissure and posterior to apex of clavus pruinose and lighter than intervening portion of corium; clavus just posterior to apex of scutellum also pruinose; base of cuneus narrowly and unevenly white; posterior margin of metepisternum, antennal segment one ventrolaterally, metacoxae distally, all trochanters and tibiofemoral articulations vaguely, all tibiae on distal one-third, all tarsal segments one and two, and apex of genital capsule yellow white.

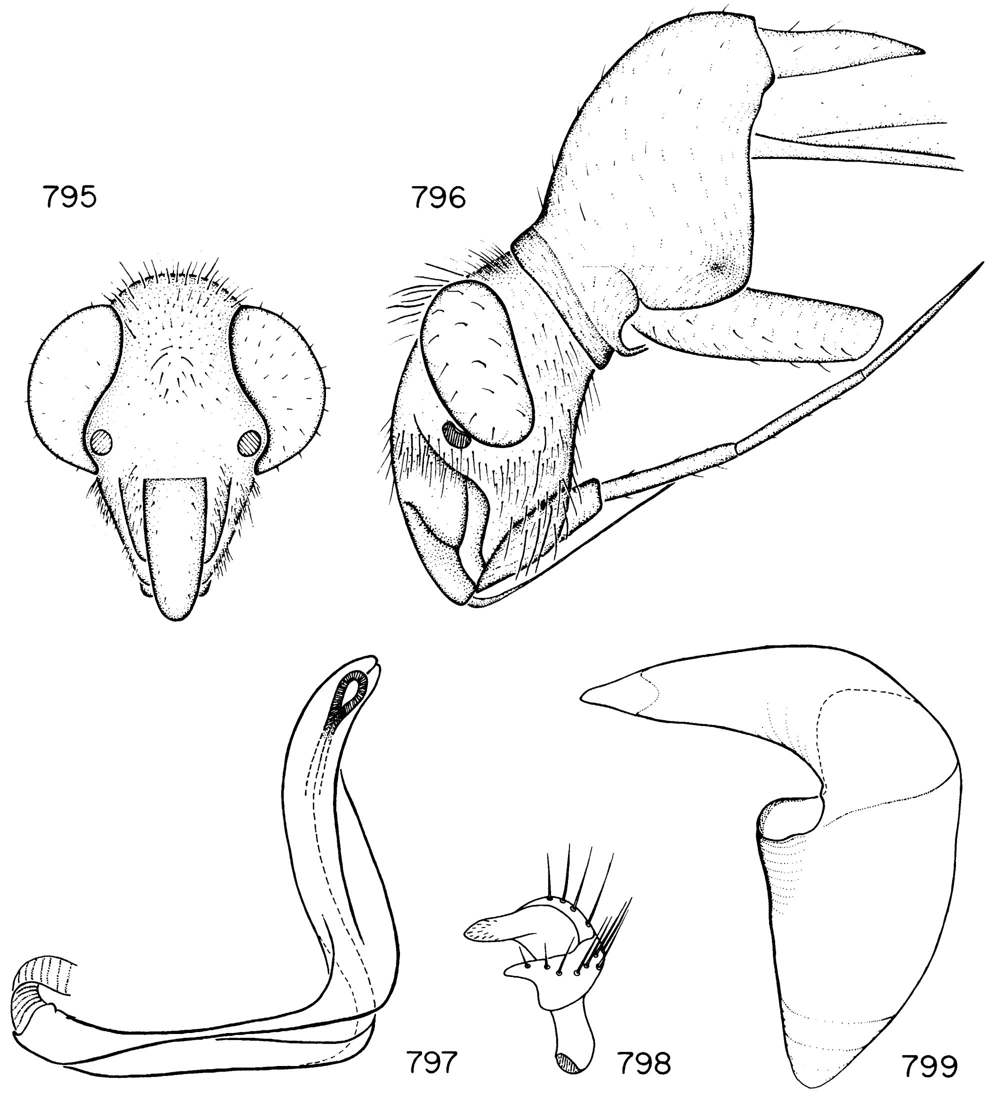
Surface texture and vestiture generally as in generic description; scutellum distinctly transversely rugose.

Labium not compressed laterally; pronotum rather strongly elevated posteriorly, lat-



FIGS. 787–794. *Trichocephalocapsus* spp. 787. *T. immaculatus,* holotype. 788–794. *T. albofasciatus.* 788. Lateral view of metathorax. 789. Pronotal collar. 790. Pretarsus. 791. Mesofemur, showing trichobothria. 792. Metafemur, showing trichobothria and fringe of erect hairs on ventral surface. 793. Detail of distal portion of metafemur. 794. Detail of proximal portion of metafemur, showing tufts of minute spicules.

eral margins weakly concave, posterior margin weakly excavated and angulate across mesoscutum, posterolateral angles rather sharply rounded; inner margin of cuneus dis-



FIGS. 795–799. *Trichocephalocapsus albofasciatus.* 795. Frontal view of head, ♂. 796. Lateral view of head and prothorax, ♂. 797. Vesica. 798. Left paramere. 799. Phallotheca.

tinctly rounded; metatibiae very weakly flattened.

MALE GENITALIA: Figures 797–799.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the white marking on the base of the cuneus.

DISTRIBUTION: Figure 785. Western New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Swart Val, Karubaka, 1400 m., November 17–21, 1958, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 5♂♂. INDONESIA: *West Irian:* Swart Valley, west side, 1400–2000 m., November 19, 1958 (Gressitt; Bishop), 1♂.

Trichocephalocapsus immaculatus,
new species
Figures 785, 787

DIAGNOSIS: Recognized by the castaneous to nearly black general coloration, the yellow-white anterior fascia on the corium, the dark unicolorous cuneus (fig. 787), the very strongly elevated pronotum, the dark unicolorous tibiae, and the dimensions.

Description: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture not measurable in available specimens, width pronotum 0.88; general coloration castaneous to nearly black; costal margin of corium white, translucent, corium at level of apex of scutellum with a distinct yellow-white transverse fascia; corium weakly pruinose anteriorly, more strongly so posteriorly, pruinosity absent posterior to fascia; cuneus unicolorous, membrane white posterior to apex of cuneus; posterior margin of metepisternum, antennal segment one ventrolaterally, metacoxae distally, metatrochanters vaguely, and all tarsal segments one and two yellow-white.

Surface texture and vestiture as in generic description.

Labium distinctly compressed laterally; pronotum very strongly elevated posteriorly, lateral margins nearly straight on posterior two-thirds, pronotum distinctly necklike behind collar, posterior margin nearly straight, posterolateral angles rather sharply rounded; mesial margin of cuneus weakly rounded; metafemora tapering distally; metatibiae distinctly flattened.

Male Genitalia: Not examined.

Measurements: See Appendix.

Etymology: Named for the lack of a white macula on the base of the cuneus.

Distribution: Figure 785. Western New Guinea.

Holotype ♂: INDONESIA: *West Irian:* Cyclops Mountains, Ifar, 300 m., June 21, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype (AMNH). 1♂.

TRIBE PHYLINI

BADEZORUS DISTANT

Badezorus Distant, 1910a, p. 15.

Diagnosis: The only included species, *tyrianus* Distant, can be recognized by the characters given in the specific diagnosis.

Male Genitalia: See *Badezorus tyrianus.*

Female: Macropterous. Basic coloration, vestiture, and surface texture as in male; eyes somewhat smaller and vertex relatively wider than in male (compare figs. 800, 801 and 802, 803), and antennal segment two slightly smaller than in male.

Female Genitalia: Not examined.

Distribution: Pakistan; Sudan.

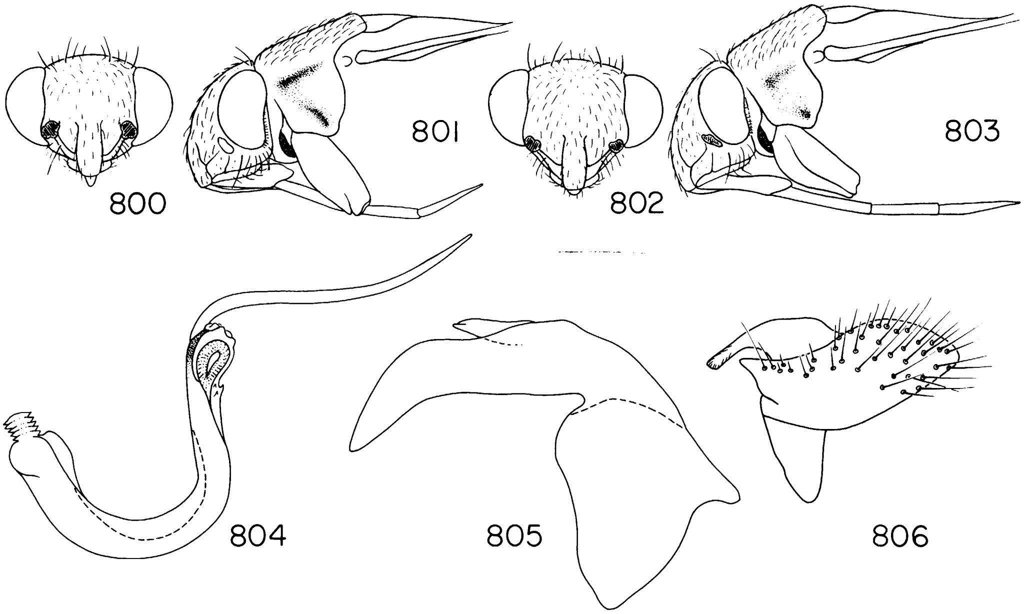
Discussion: Carvalho (1952) synonymized *Badezorus* Distant with *Campylomma* Reuter; he gave no explanation for that action. Comparison of specimens of *Badezorus tyrianus* Distant, the only species included in the genus, with *Campylomma nigronasuta* Reuter (the type species of that genus) and with other species of *Campylomma* indicates that *tyrianus* is not a member of *Campylomma,* based on its possession of enlarged pulvilli which cover nearly the entire ventral surface of the claw, the head which is not concave behind, the eyes which are relatively small and occupy only about two-thirds the height of the head, the absence of a row of spicules on the dorsal surface of the distal half of the metafemur, and the form of male genitalia, in which there is only a single very long, slender, apical, vesical spine. On the basis of these observations, I am treating *Badezorus* as a valid genus. Its affinities remain to be determined, and it may in fact be synonymous with some group other than *Campylomma.*

Badazorus tyrianus Distant

Figures 800–806

Badezorus tyriannus Distant, 1910a, p. 15.

Diagnosis: Recognized by the small elongate oval, weakly flattened body form, the clypeus being partially visible from above, the rather small eyes, the posterior margin of the vertex broadly rounded, the anterior margin of the pronotum sinuous and excavated mesially, the femora with numerous brown spots, and the form of male genitalia, the basal portion of the vesica U-shaped, the secondary gonopore well developed and with some associated barbules, and the single apical spine very long and attenuated (fig. 804), the phallotheca heavy, L-shaped, and with a projection on the dorsal surface (fig. 805), the left paramere of a form common to many



FIGS. 800–806. *Badezorus tyrianus*. 800. Frontal view of head, ♂. 801. Lateral view of head and prothorax, ♂. 802. Frontal view of head, ♀. 803. Lateral view of head and prothorax, ♀. 804. Vesica. 805. Phallotheca. 806. Left paramere.

phylines and with many setae (fig. 806). There is a very weak sexual dimorphism of antennal segment two. The claws are long, rather sharply bent apically, and with the pulvilli covering nearly their entire ventral surface and apparently attached over most of their length.

MALE GENITALIA: Figures 804–806.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Pakistan; Sudan.

SPECIMENS EXAMINED: INDIA: Delhi, April 4–8, 1961, at light (Oman; USNM), 4♂♂, 2♀♀. PAKISTAN: Lahore, May 9, 1908 (BMNH), 1♂, 1♀ (lectotype). SUDAN: Shambat, November 1974, on cotton (Wasila; BMNH), 2♂♂, 2♀♀.

DISCUSSION: In his original description of *Badezorus tyrianus* Distant (1910a) did not indicate how many specimens he examined and designated no type. I am designating as a lectotype a female specimen in the British Museum (Nat. Hist.) which agrees with the locality data in Distant's original description. It bears the labels: "Lahore, Punjab, 9-V-08, N.A.," "Distant Coll., 194-383," "*Badezorus tyrianus* Dist., type," and "*Badezorus tyrianus* Distant, LECTOTYPE det. R. T. Schuh."

CAMPYLOMMA REUTER

Campylomma Reuter, 1878, p. 52; Wagner, 1970–1971, pp. 11–17; Wagner, 1975, p. 66.

DIAGNOSIS: Recognized by the row of tiny dark spicules on the distal half of the dorsal surface of the metafemur (e.g., figs. 828, 829), vesica in male usually with two apical blade-like structures (e.g., figs. 833, 935), head weakly to strongly concave behind, usually obscuring anterior margin of pronotum; parempodia setiform (fig. 832) to moderately fleshy and convergent apically, as found also, for example, in *Ellenia obscuricornis*.

DESCRIPTION: Macropterous male. Small- to moderate-sized, ovoid, range length apex tylus-cuneal fracture 1.23–2.25, range width pronotum 0.73–1.13; general coloration from almost totally white to mostly black; most known species dirty white or dirty yellow, rarely bright orange, marmorate, dark brown or black; antennal segment two from unicolorous light to unicolorous black, often with a black basal ring, sometimes black distally; coloration of antennal segments one, three, and four variable; spines and trichobothria of meso- and meta-femora usually with black bases; tibial spines black, often with black bases.

Dorsum smooth to rugulose or weakly rugose; hemelytra often dull, sometimes weakly shining and subhyaline; head and pronotum often weakly to more strongly shining; dorsal vestiture either of light or dark, reclining, common setae, or common setae and some flattened, shining, subappressed setae on corium and clavus; anterolateral angles of pronotum with an erect spine; distal half of dorsal surface of metafemur with a more or less complete row of tiny brown or black spicules.

Body form usually ovoid, or more elongate and nearly parallel-sided, sometimes a nearly rectangular; head transverse, usually about three times as wide as long, two-thirds as high as wide; frons sometimes weakly bulging in dorsal view; vertex usually horizontal or nearly so, sometimes nearly vertical, posterior margin usually rounded, sometimes carinate; eyes large, nearly as high as head, occupying most of head in lateral view, usually contiguous with pronotum; head usually concave behind, obscuring anterior margin of pronotum; antennal segment one short, length almost one-half interocular space, segment two usually increasing slightly in diameter distally, sometimes weakly enlarged and of uniform diameter over entire length, or more rarely swollen and terete (see *collina*), length from slightly less than width of head to almost 1.30 times width of head, segments three and four slender, subequal in diameter; gula obsolete; rostrum occasionally reaching only onto procoxae, usually reaching to at least apex of mesocoxae, sometimes surpassing metacoxae and reaching into abdomen; pronotum usually more or less flat, lateral margins nearly straight to evenly convex; mesoscutum narrowly exposed, flat, scutellum almost flat; cuneal incisure usually obsolete, sometimes more pronounced; abdomen usually broad basally and tapering posteriorly, occasionally slender and not tapering posteriorly (see *papuana*); meso- and meta-femoral trichobothria as in figures 830, 831, 1000, and 1001; metafemora sometimes enlarged as if for jumping (e.g., see *atra*); tarsal segment one short, tarsal segments two and three longer, subequal in length; parempodia sometimes setiform and straight, often setiform and sharply bent and convergent near apex, sometimes lightly swollen and weakly flattened, curved and converging apically, or more strongly swollen, curved, flattened, and convergent (as in *Ellenia obscuricornis*); claws broadened basally, angulate, with small pulvilli (very rarely strongly bent and cleft basally; see *papuana,* fig. 998).

MALE GENITALIA: Vesica S-shaped, twisted, secondary gonopore subapical, vesica usually with two apical blades of varying length and width (fig. 833); apical blades sometimes serrate (fig. 904) or rather strongly modified and bearing a few to many spicules (fig. 921) or apparently strongly reduced or absent (figs. 938, 949); phallotheca more or less C-shaped or L-shaped, form relatively constant; left paramere boat-shaped, of relatively constant form; right paramere small, lanceolate; genital capsule conical, usually without ornament, sometimes with a short, posteriorly directed thumblike process on the left side between base of capsule and insertion of left paramere.

FEMALE: Macropterous. Coloration usually similar to male; antennal segment two sometimes with only black basal ring in species with males with unicolorous black second segment.

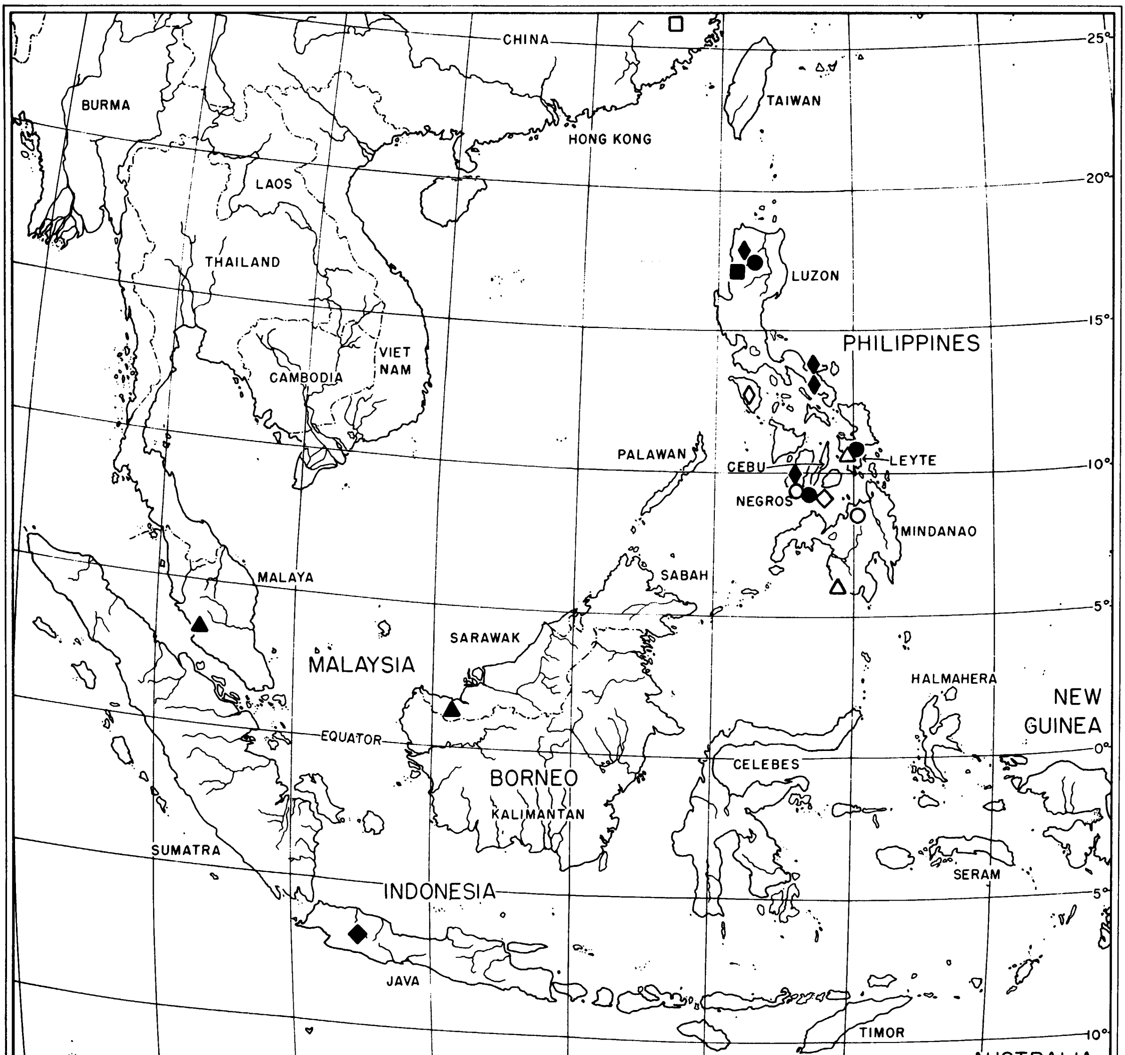
Body surface and vestiture similar to male; eyes usually smaller than in male, interocular space relatively wider; antennal segment two nearly always slender basally than in male and tapering to slightly greater diameter distally; body usually more ovoid than in male.

FEMALE GENTALIA: Posterior wall simple.

TYPE SPECIES: *Campylomma nigronasuta* Reuter.

DISTRIBUTION: Figures 808–814. Cosmopolitan (see discussion).

DISCUSSION: In a previous study (Schuh, 1974) I had from Africa several apparent species of *Campylomma* available for study, but placed them under the heading "*Sthenarus-Campylomma*" because they did not all conform to existing diagnoses for the genus. In working with the Oriental fauna the problem of diagnosing *Campylomma* resurfaced, but this time took on more impor-


CHINA
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CEBU
LEYTE
NEGROS
MINDANAO
SABAH
MALAYA
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
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15°
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5°
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95°
100°
105°
110°
115°
120°
125°
130°

FIG. 808. Distribution of *Campylomma* spp. *C. atra* (○); *C. chinensis* (□); *C. leyteana* (△); *C. livida* (◇) (in part); *C. lividicornis* (●) (in part); *C. luzonica* (■); *C. malaysiana* (▲); *C. marjorae* (◆) (in part); *C. monticola* (◆); *C.* near *monticola* (◇).

tance, because approximately one-fifth of the taxa known from the region are assignable to the genus.

Wagner's (1970–1971, 1975) work on the Mediterranean mirid fauna is the most recent study to diagnose *Campylomma*. His (1975) generic diagnosis and keys include the following characteristics which seem to be of importance, since they do not apply to all Phylini: (1) small, shape ovoid; (2) light coloration, without spots on hemelytra; (3) relatively long, light or dark vestiture; (4) short head, not extending below eye by more than one-third height of eye; (5) second antennal segment shorter than width of head and enlarged in males; (6) femora light with black spots; (7) tibial spines with black bases; (8) tarsal segment two longer than three; (9) pa-

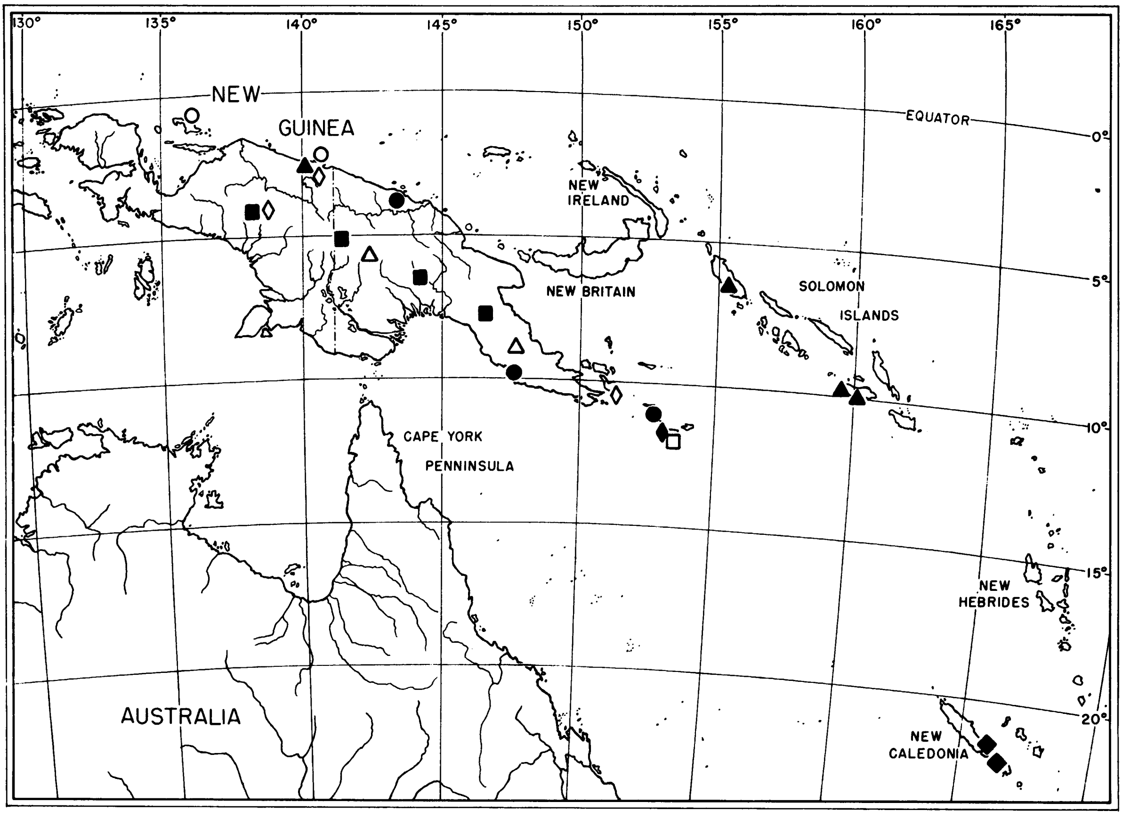


FIG. 809. Distribution of *Campylomma* spp. (continued). *C. biak* (○); *C. guadalcanalica* (□); *C. irianica* (◇); *C. lividicornis* (●) (in part); *C. luzonica* (■) (in part); *C. marjorae* (◆) (in part); *C. marmarosa* (△); *C. nigra* (▲); *C. noumeae* (◆).

rempodia setiform, almost straight or very weakly curved; (10) claws without basal tooth or prominence; (11) pulvilli short [small] but distinct; (12) vesica S-shaped with two long chitinized bands [blades] distally; (13) secondary gonopore removed from apex of vesica; and (14) no paramere-like appendages on phallotheca.

Examining this list, those points which seem to create problems in diagnosing *Campylomma* outside of the Palearctic are the following:

a. Because primary divisions within the Miridae are often made on the basis of the pretarsus, these structures are usually examined first; in fact Wagner (1975) uses both the parempodia and the pulvilli in diagnosing his subtribes of the Phylini. Following Wagner (1975) and Carvalho (1955a) *Campylomma* should have setiform and nearly straight parempodia. In fact Oriental and Pacific taxa that would otherwise be diagnosed as *Campylomma* have parempodia of four types: (i) setiform, straight, (ii) setiform, with sharply bent apices, (iii) weakly enlarged, slightly flattened, curved and convergent apically, and (iv) noticeably enlarged, curved, apically flattened, and convergent apically, as in *Ellenia obscuricornis*;

b. Specimens from Africa, the Orient, and the Pacific which are diagnosable as *Campylomma* often have some flattened, subappressed, shining setae on the hemelytra in addition to light- or dark-colored common setae;

c. There are several taxa from Africa, the Orient, and the Pacific which are black,

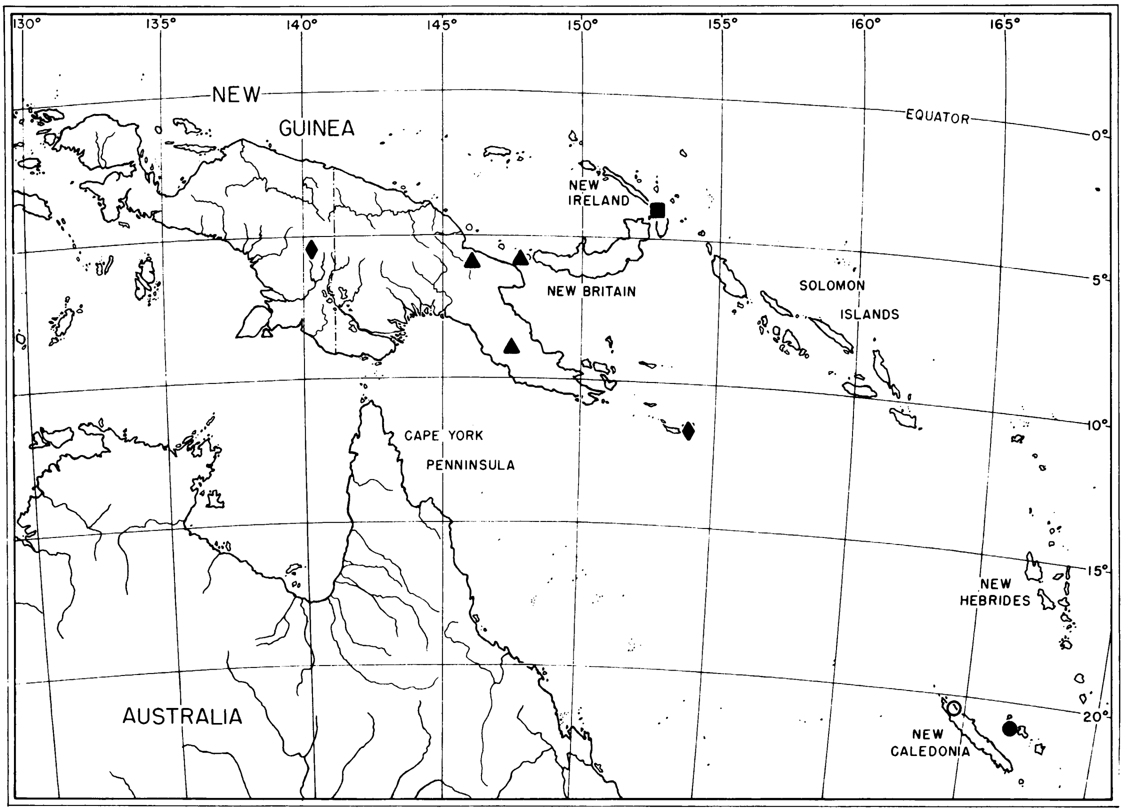


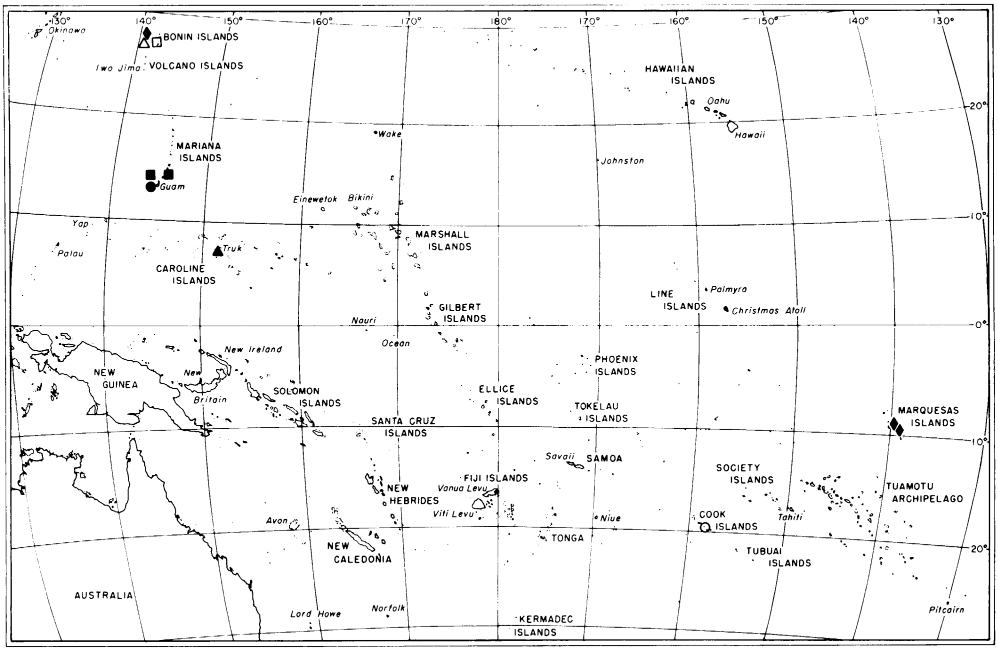
FIG. 810. Distribution of *Campylomma* spp. (continued). *C. novohebridense* (●); *C. novoirlandense* (■); *C. papuana* (▲); *C. sandaracine* (◆); *C. sclephracantha* (O).

> or otherwise diverging from light colored, and which cannot therefore be diagnosed as *Campylomma* in addition to the fact that the dark spots on the femora are unicolorous with the ground color femora; also some species with relatively light-colored femora do not have dark femoral spots.

In addition to these difficulties, all characters used by Wagner to diagnose *Campylomma* are present in some other genera of Phylini. Thus, it would be desirable to have a character or characters unique to the taxon, especially so that *Campylomma* could be diagnosed independent of coloration and parempodial structure, the latter of which is seemingly quite variable in certain groupings within the Phylini, and which do not necessarily correspond to Wagner's (e.g., 1975) subtribes. Such a character apparently exists in the form of a row of black spicules on the distal one-half of the dorsal surface of the metafemur.

On the characters in the list above derived from Wagner's work, the following changes must be made: (2) coloration light or dark, without black spots on dorsum; (3) relatively long light or dark vestiture, sometimes with flattened, subappressed shining setae on clavus and corium; (5) length of antennal segment two variable, from less than width of head to 1.30 times width of head; (6) femora usually with black spots, sometimes absent, femora sometimes entirely black; (9) parempodia setiform and straight, or setiform and sharply bent and convergent apically, or slightly to rather strongly enlarged, curved, flattened, and convergent apically.

This modified generic diagnosis can now be applied on a worldwide basis. The literature suggests that *Campylomma* is largely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HAWAIIAN ISLANDS
Oahu
Hawaii
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MARIANA ISLANDS
Guam
Wake
Johnston
Einewetok
Bikini
10°
Yap
Palau
Truk
CAROLINE ISLANDS
MARSHALL ISLANDS
LINE ISLANDS
Palmyra
Christmas Atoll
GILBERT ISLANDS
Nauri
0°
New Ireland
Ocean
PHOENIX ISLANDS
NEW GUINEA
New Britain
SOLOMON ISLANDS
ELLICE ISLANDS
TOKELAU ISLANDS
MARQUESAS ISLANDS
SANTA CRUZ ISLANDS
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Savaii
SAMOA
SOCIETY ISLANDS
FIJI ISLANDS
NEW HEBRIDES
Vanua Levu
Viti Levu
TUAMOTU ARCHIPELAGO
Avon
Niue
COOK ISLANDS
Tahiti
TONGA
NEW CALEDONIA
TUBUAI ISLANDS
20°
AUSTRALIA
Lord Howe
Norfolk
KERMADEC ISLANDS
Pitcairn

FIG. 811. Distribution of *Campylomma* spp. (continued). *C. aitutaki* (○); *C. boharti* (□); *C. boninensis* (△); *C. breviata* (◇); *C. breviceps* (●); *C. brunneicollis* (■); *C. carolinensis* (▲); *C. chichijima* (♦).

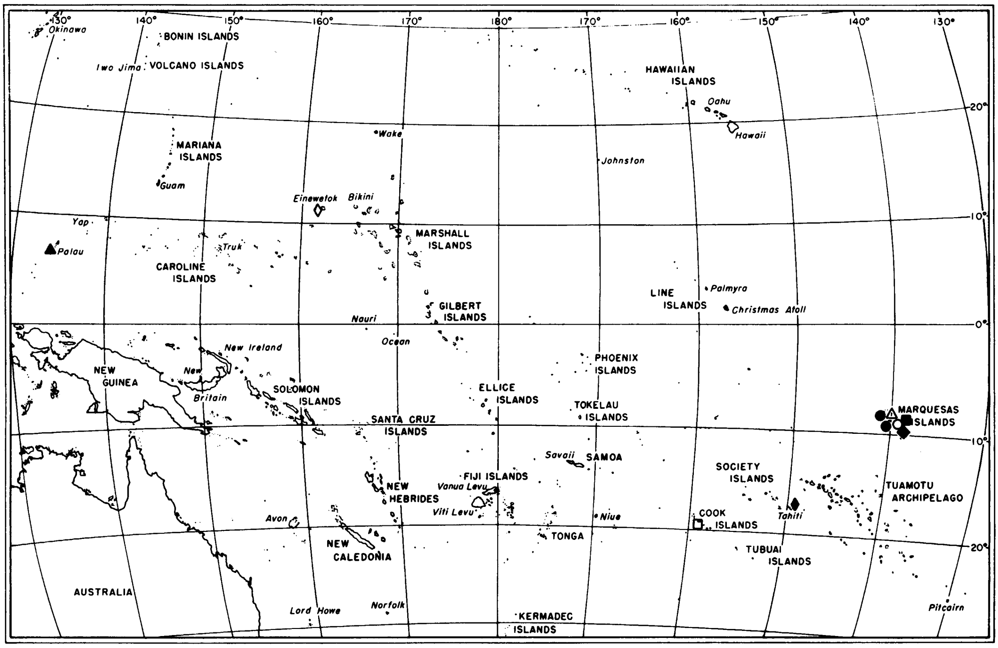
confined to the Old World with its greatest diversity in the Palearctic and the Pacific, and with some lesser number of species in Africa and Australia (Reuter, 1905). In the New World *Campylomma verbasci* (Meyer) has been considered as introduced, and *C. cardini* Barber and Bruner is known from Cuba, and whose authors commented (1946): "It is not entirely unlikely that . . . [*cardini*] will eventually prove to be introduced."

My examination of collections indicates the presence of several species of *Campylomma* in Africa, some probably undescribed. Also, the group is probably widely distributed in Australia, represented by several species. Of the species known to occur in the New World, only *verbasci* is a true *Campylomma,* with others belonging to the putative sister genus *Rhinacloa* Reuter (based on the presence of the row of tiny spicules on the dorsal surface of the metafemur). *Campylomma citrina* Carvalho (in Carvalho and Gagne, 1968) from the Galapagos is certainly either a species of *Ellenia* or *Ragmus,* based on the structure of the male genitalia as illustrated by those authors.

Knight (1938b) noted that since *Campylomma* specimens are small they were often probably not saved by the general collector, and that this might account for their absence from the Neotropical Region. There seems to be a certain correctness in his supposition, in that Miridae of less than 3 mm. in length are less common than larger specimens in collections, and when they do exist are often in terrible shape. Nonetheless, *Campylomma,* in the sense of *nigronasuta,* may not occur in the Neotropics.

The first papers dealing with *Campylomma* in the Orient were those of Reuter (1884, 1912), Distant (1910a, 1910b), and Poppius (1914c, 1915); no subsequent work has been done. For the Pacific, several important papers exist, beginning with Knight's (1938a, 1938b) work on *Campylomma* from the Society and Marquesas islands, followed by Usinger's (1946) "Insects of Guam," and Carvalho's (1956b) Miridae fascicle of the "Insects of Micronesia."

Knight (1938b) developed the idea of using the pattern of black spots on the metafemora as a taxonomic character; he was followed by Carvalho (1956b). The concept was of interest and has some merit. It is, however, not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Bikini
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Palau
Truk
CAROLINE ISLANDS
GILBERT ISLANDS
Nauri
Ocean
New Ireland
NEW GUINEA
New Britain
SOLOMON ISLANDS
SANTA CRUZ ISLANDS
ELLICE ISLANDS
FIJI ISLANDS
Vanua Levu
Viti Levu
NEW HEBRIDES
NEW CALEDONIA
Avon
Lord Howe
Norfolk
AUSTRALIA
KERMADEC ISLANDS
TONGA
Niue
Savaii
SAMOA
TOKELAU ISLANDS
PHOENIX ISLANDS
HAWAIIAN ISLANDS
Oahu
Hawaii
Johnston
LINE ISLANDS
Palmyra
Christmas Atoll
MARQUESAS ISLANDS
SOCIETY ISLANDS
Tahiti
TUAMOTU ARCHIPELAGO
COOK ISLANDS
TUBUAI ISLANDS
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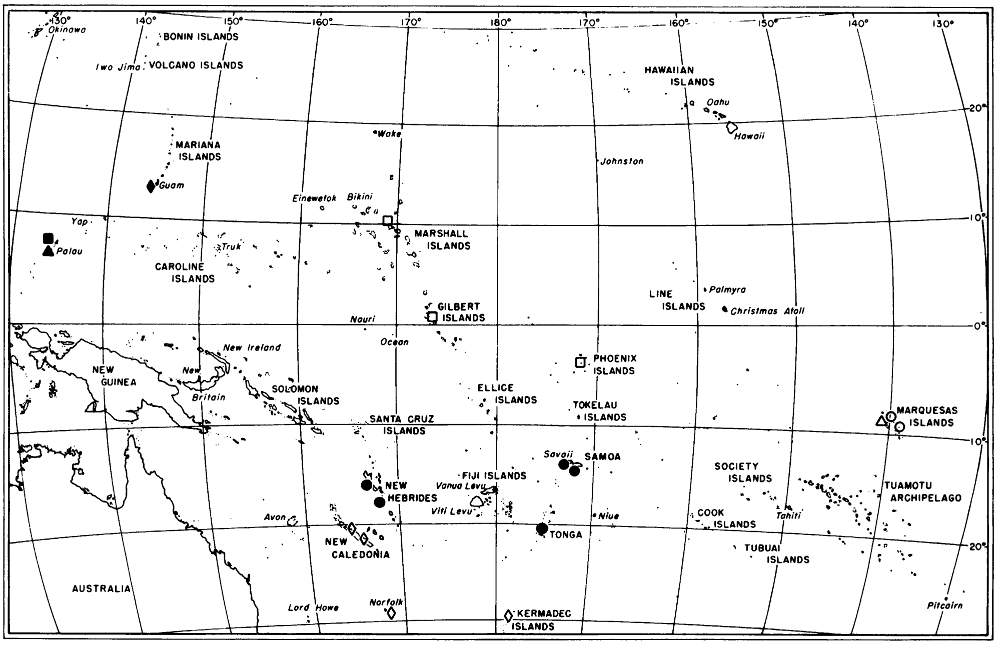
FIG. 812. Distribution of *Campylomma* spp. (continued). *C. collina* (○); *C. cookensis* (□); *C. cuneolata* (△); *C. eniwetok* (◇); *C. fusca* (●); *C. hivaoae* (■); *C. kororensis* (▲); *C. kraussi* (▲); *C. longirostris* (▲).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New Ireland
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Lord Howe
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150°
160°
170°
180°
170°
160°
150°
140°
130°
20°
10°
0°
10°
20°

FIG. 813. Distribution of *Campylomma* spp. (continued). *C. marquesana* (○); *C. marshallensis* (□); *C. minuenda* (△); *C. novocaledonica* (◇); *C. pacificae* (●); *C. palauana* (■); *C. palauensis* (▲); *C. pallida* (◆).

without difficulties. Principal among these is that most of the spots are always in the same pattern, because that are associated with the bases of the femoral spines and trichobothria, which are rather constant in their arrangement. Thus, the prime differences to be observed between species appear to be in the degree or intensity of pigmentation, more than in the patterns themselves. Since intensity of pigmentation can be quite variable, even within species, the femoral spots can be misleading. I have therefore not used them, except in cases where they are conspicuously present and contrasting with the femoral background coloration or conspicuously absent by their lack of contrast with the background coloration.

None of the authors who have worked on the Oriental or Pacific *Campylomma* faunas have used the male genitalia; for the European fauna they were used at least as early as 1952 by Wagner in his contribution to "Die Tierwelt Deutschlands." My work on the Oriental-Pacific fauna suggests that most species of *Campylomma* can be diagnosed by the presence of two apical vesica blades in combination with the metafemoral spicules. I have placed a few taxa in *Campylomma* on the basis of metafemoral spicules, even though they lack the vesical blades. Some Phylini without metafemoral spicules possess apical vesical blades. At least one non-phyline (from Hawaii) possesses metafemoral spicules, but appears unrelated to *Campylomma* on the basis of all other characters.

Knight (1938b)[2] placed great emphasis on the length of the labium and the length of antennal segment two relative to the width of the head in diagnosing *Campylomma* species from the Marquesas. Even though these characteristics often work well for diagnosing species or genera of Miridae, they are not as useful for the Marquesan *Campylomma* species as Knight's work seems to suggest. Knight designated as paratypes virtually every Marquesan specimen he had at hand—males, females, and some nymphs. Upon reexamination of this material it seemed to me that several of Knight's paratype series contained more than one species. Dissection of the male genitalia indicated that the apical vesical blades possessed excellent characters for separating several of the Marquesan species; it also revealed that not all of Knight's species deserved that status, and that dimensions and color characteristics were of only limited utility in diagnosing species; for those species where measurements are useful, this is indicated in the key provided below.

As a consequence of the difficulty of distinguishing Marquesan taxa on measurements alone, I have chosen to describe new taxa of *Campylomma* only when males are available. In cases where associations seemed reasonably certain I have included females as paratypes or in lists of specimens examined. The key to species is based solely on males. I strongly recommend that no attempt be made to describe additional species of *Campylomma* from the Pacific and the Orient without access to information on the male genitalia.

NOTES ON ADDITIONAL SPECIMENS: Specimens (Bishop) represented by insufficient material for description are known from the following localities; all have the thumblike process on the left side of the genital capsule, and of those that I have dissected, the vesica is similar in shape and placement of spicules to *livida*: CHINA: Fukien, 2♂♂; Hong Kong, Sai Kung Station, 1♂. MALAYSIA: *Sabah:* Tawau Residency, Quoin Hill Cocoa Re-

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[2] In the 1930s H. H. Knight was one of a few persons doing taxonomic work on the Miridae; Poppius was dead, and only W. E. China occasionally produced a small paper. After preparing the Miridae and Anthocoridae (Knight, 1935) chapters for the "Insects of Samoa," Knight was apparently approached by the staff of the B. P. Bishop Museum to describe the Miridae from the Marquesas and Society islands, to which the institution had had recent expeditions. Knight received the material and produced two papers (Knight, 1938a, 1938b), describing a total of 12 new species. I searched the collections of the Bishop Museum in 1976 in anticipation of finding specimens from Tahiti and the Marquesas, but to no avail. At about that time Knight died and his collection was transferred to the National Museum of Natural History in Washington, D.C. I contacted Dr. R. C. Froeschner, who informed me that Knight had never returned the material. Through the cooperation of Dr. Froeschner and Mr. Gordon Nishida of the Bishop Museum I was able to study all the material originally examined by Knight.

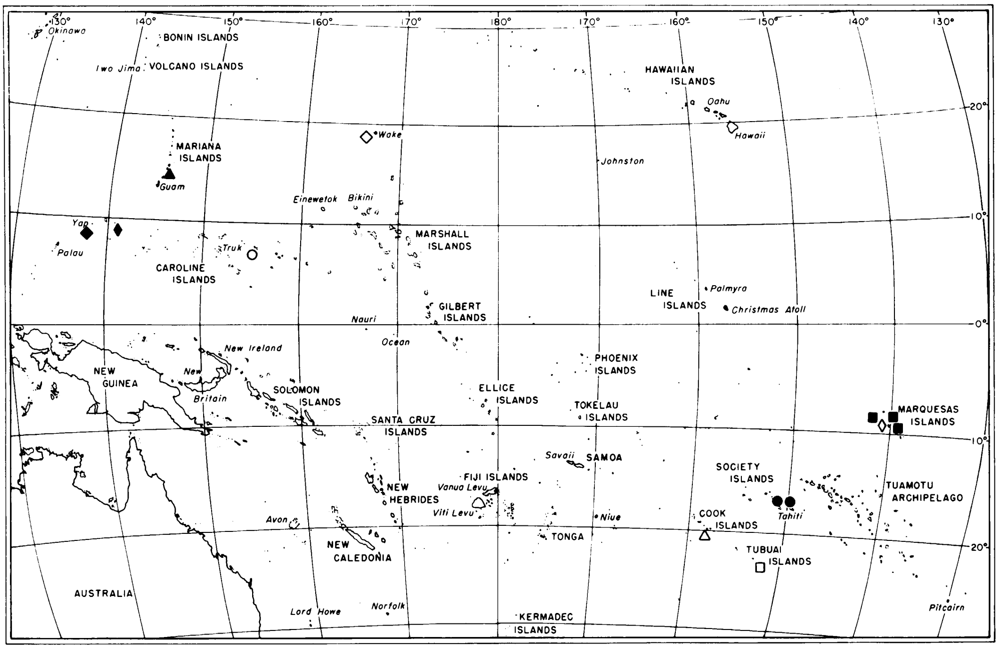

130°
140°
150°
160°
170°
180°
170°
160°
150°
140°
130°
Okinawa
BONIN ISLANDS
Iwo Jima
VOLCANO ISLANDS
HAWAIIAN ISLANDS
Oahu
Hawaii
20°
MARIANA ISLANDS
Guam
Wake
Johnston
Eniwetok
Bikini
10°
Yap
Palau
Truk
CAROLINE ISLANDS
MARSHALL ISLANDS
LINE ISLANDS
Palmyra
Christmas Atoll
GILBERT ISLANDS
Nauri
0°
New Ireland
Ocean
PHOENIX ISLANDS
NEW GUINEA
New Britain
SOLOMON ISLANDS
ELLICE ISLANDS
TOKELAU ISLANDS
SANTA CRUZ ISLANDS
MARQUESAS ISLANDS
10°
Savaii
SAMOA
SOCIETY ISLANDS
FIJI ISLANDS
Vanua Levu
NEW HEBRIDES
Viti Levu
TUAMOTU ARCHIPELAGO
Avon
Niue
COOK ISLANDS
Tahiti
TONGA
NEW CALEDONIA
TUBUAI ISLANDS
20°
AUSTRALIA
Lord Howe
Norfolk
KERMADEC ISLANDS
Pitcairn

FIG. 814. Distribution of *Campylomma* spp. (continued). *C. ponapensis* (O); *C. rapae* (□); *C. raratongana* (△); *C. rubrotincta* (◇); *C. tahitica* (●); *C. tinctipennis* (■); *C. townesi* (▲); *C. ulithiensis* (◆); *C. wakeana* (◇); *C. yapensis* (◆).

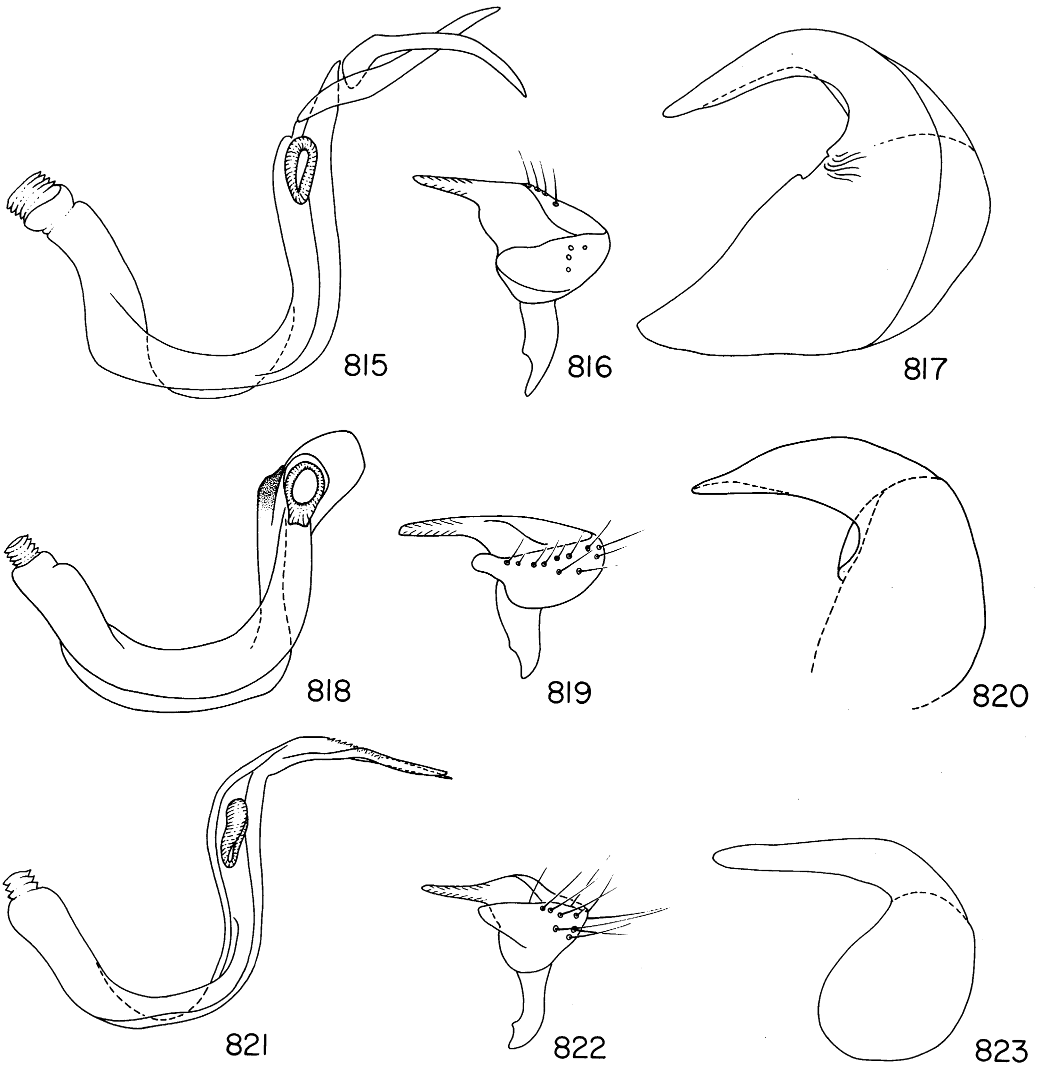
search Station, 1♂. PAPUA NEW GUINEA: *Central Prov.:* Port Moresby, 1♂. PHILIPPINE ISLANDS: *Luzon:* Mountain Prov. and Negros, 3♂♂. TAIWAN: 15 mi. NW of Taipei, 1♂. VIET NAM: E of BanMe Thout, Dalat, Fyan, and Nha Trang, 4♂♂.

Two male specimens (Bishop) with the following data apparently belong to the *livida* group: CHINA: Fukien and Tung My Ying. They have a more slender elongate vesica than found in *livida* and other described species of the group. Both specimens have the glassy spicules on the envelope-like fold of the long apical blade. The shorter apical blade is slender and in one specimen has no spicules on its dorsal surface, whereas in the other there are three or four spicules on the dorsal surface of the shorter blade. No record is available regarding the presence or absence of the thumblike process on the genital capsule, since I was not aware of the existence of that structure when the dissections of these specimens were originally made. The coloration of the two males is similar to other *livida* group members; however, the scutellum is infuscate and antennal segments one and two are mostly dark.

Five male specimens (AMNH, DSIR) have the following data: NIUE ISLAND: Hukupu. The vesica is very similar to that of *livida,* for example, but the genital capsule has no thumblike process on the left side. The size and coloration are similar to *livida.* All the specimens are in poor condition and therefore I have not described them.

A single male specimen (Bishop) bears the following data: TONGA: Eva, Hafu. The vesica is very close to described members of the *livida* group, with spicules on the dorsal surface of the shorter vesical blade and glassy spicules associated with the longer blade. No record was made regarding the thumblike process on the genital capsule. The specimen is in the size range of *livida* and is somewhat orangish in coloration; antennal segment one is almost totally dark, segment two has a black basal ring with the remainder of the segment infuscate.

A final male specimen (Bishop) bears the following data: VOLCANO ISLANDS: Iwo



FIGS. 815–823. *Campylomma* spp. male genitalia. 815–817. Specimen from Tahiti. 815. Vesica. 816. Left paramere. 817. Phallotheca. 818–820. Specimen from New Zealand. 818. Vesica. 819. Left paramere. 820. Phallotheca. 821–823. Specimen from Palau Islands, Koror. 821. Vesica. 822. Left paramere. 823. Phallotheca. (See discussion under Notes on Additional Specimens.)

Jima. It resembles *livida* in the form of the vesica and in the size and coloration. I did not record the presence or absence of the thumblike process on the genital capsule.

Vesical blades serrate. Three specimens bearing the following data have the apical blades of the vesica as in figure 821 (Koror specimen) or similar, are somewhat orangish in coloration, and have a black basal ring on antennal segment two (the Koror specimen has no antennae): PALAU ISLAND: Koror (Bishop). PAPUA NEW GUINEA: Western Highlands Prov., Korop, Upper Jimi River (Bishop); [Province ?], Biniguni, Gwariu River (AMNH).

Black specimens. Undescribed black specimens (AMNH) are known from: INDONESIA: *Sumatra:* Dolok Merangir. PHILIPPINE ISLANDS: *Negros Island.*

Other specimens. A single male specimen (Bishop) bears the following data: BONIN ISLANDS: Chichi Jima Group, Ani Jima, San-zan. The apical vesical blades are very similar to *boninensis*; the general coloration is light with the dorsum weakly infuscate; antennal segment two has a narrow black basal ring.

One male and one female specimen (Bishop) from the Marquesas Islands and a single male specimen (Bishop) from Tahiti have the second antennal segment terete, similar to that found in *collina,* although more strongly swollen. Each appears to represent an additional species, based on color and dimensions.

One male and two female specimens (Bishop) from Tahiti appear to represent a new species. The genitalia are shown in figures 815–817; the dorsum is light castaneous with some light markings; antennal segment two is not terete.

Four female specimens (Bishop) from Wau, Papua New Guinea appear to represent a new species, possibly near *sandaracine.*

One male and one female specimen (DSIR) from Kitchener Park, New Zealand, apparently represent a new species. This species is elongate, parallel-sided, and basically brown in coloration; the male genitalia, shown in figures 818–820, are unusual for *Campylomma* in not having apical blades on the vesica; metafemoral spicules are present, however.

Three male specimens, all of basic brown coloration, one from Papua New Guinea (Bishop), one from West Irian (Bishop), and one from Thailand (USNM) all apparently represent undescribed species. The male genitalia were not dissected.

The following localities refer to female specimens, teneral males, and others with insufficient material for description or positive identification. BONIN ISLANDS: Chichi Jima, 1♂ (Bishop); Haha Jima, 1♂ (Bishop). CAROLINE ISLANDS: Faraulep Atoll, Pigue Island, 2♀♀ (Bishop); Merir Island, 4♀♀ (Bishop). CHINA: Fukien, 14♀♀ (Bishop). COOK ISLANDS: Aitutaki, 1♀, Raratonga, 1♀, 4♀♀ (AMNH, DSIR). FIJI: Oneata, 1♀, Viti Levu, 2♂♂, 1♀ (Bishop). HONG KONG, 2♂♂, 4♀♀ (Bishop). INDONESIA: Sumatra, 1♀ (AMNH); West Irian, 1♂, 3♀ (Bishop, BMNH). KERMADEC ISLANDS: Raoul Island, 1♀ (DSIR). LAOS, 3♂♂, 2♀♀ (Bishop). LOYALTY ISLANDS: Mare, 1♀ (Bishop). MALAYSIA: Malaya, 2♂♂, 3♀♀ (BMNH); Sabah, 1♂, 3♀♀ (Bishop). MARIANA ISLANDS: Guam, 1♂, 1♀ (Bishop, USNM). MARQUESAS ISLANDS: 5♂♂, 245♀♀ (Bishop). MARSHALL ISLANDS: Kwajalein Atoll, Ebeye, 1♀ (Bishop). NEW CALEDONIA: 2♂♂, 1♀ (Bishop). NEW HEBRIDES: Efate, 1♂ (Bishop); Espirito Santo, 6♀♀ (Bishop, USNM). NIUE ISLAND, 3♂♂, 3♀♀ (DSIR). PAPUA NEW GUINEA (including Guadalcanal, New Britain and New Ireland), 18♂♂, 31♀♀ (AMNH, BMNH, Bishop). PHILIPPINE ISLANDS: 12♂♂, 13♀♀ (AMNH, Bishop, USNM). SOCIETY ISLANDS: 6♀♀ (Bishop). SRI LANKA: 2♂♂, 8♀♀ (Lund), all in very poor condition. TAIWAN: 5♂♂, 15♀♀ (Bishop). THAILAND: 2♂♂, 1♀ (Bishop). TONGA ISLANDS: Nuiatoputapu, 1♀ (DSIR); Tonga Tapu, 1♂ (Bishop).

HOSTS: The habits of *Campylomma* are not well understood. Ballard (1921) indicated that *C. livida* sucks plant juices as well as attacking other insects. Wagner (1975) listed as hosts for Mediterranean species: *Acacia raddiana, Acacia seayi, Salix* sp., and *Vitex agnus castus.* Knight (1941) listed the host of *C. verbasci* in North America as *Verbascum* sp. and less commonly *Verbena stricta, Brassica nigra,* and *Pyrus malus*; he noted that *verbasci* is sometimes attracted to honeydew secretions of aphids.

For the Oriental and Pacific species of *Campylomma* the following host records are available:

> *Acacia farnesiana* (*novocaledonica*); *Acacia* sp. (*livida, novocaledonica*; *Ageratum conyzoides* (*fusca*); *Andropogon sorghum* (*livida*); *Angiopteris* sp. (*cuneolata*); *Bidens lantanoides* (*cuneolata*); *Cardiospermum haliscabum* (*townesi*); *Cheirodendron* sp. (*collina*); *Cordia* sp., (*ulithiensis*); *Crotalaria jucancea* (*livida*); *Croton* sp. (*novocaledonica*); *Cyrtandra* sp. (*collina, fusca*); *Casuarina* sp. (*novohebridense*); *Cyathodes tameiamiae* (*tinctipennis*); *Dodonea viscosa* (*marquesana*); *Dodonea* sp. (*kraussi*); *Glochidium* sp. (*breviata, hivaoae, marquesana*); *Gossypium* sp. (*livida*); *Hibiscus tiliaceus* (*marquesana, rapae, tahitica*); *Lantana* sp. (*novocaledonica*); *Melochia velutina* (*marquesana, minuenda*); *Metrosideros collina* (*collina, longirostris, marquesana, rubrotincta, tinctipennis*);

Metrosideros sp. (*fusca*); *Morinda citrifolia* (*marquesana*); *Portulaca* sp. (*wakeana*); *Reynoldia* sp. (*fusca*); *Scaevola* sp. (*brunneicollis*); *Sclerotheca* sp. (*fusca*); *Sesamum indicum* (*livida*); *Sesivium* sp. (*wakeana*); *Sida* sp. (*minuenda*); *Vaccinium* sp. (*collina, fusca*); *Waltheria americana* (*minuenda*); *Weinmannia* sp. (*collina, hivaoae, longirostris, tinctipennis*).

KEY TO MALES OF DESCRIBED SPECIES OF *CAMPYLOMMA*[3]

1. Antennal segment two terete, as in *Atractotomus* .... *collina*
   Antennal segment two cylindrical or weakly tapered toward base 2
2. Antennal segment two light or dark, unicolorous 3
   Antennal segment two with a narrow brown or black basal ring and/or distally black or brown 15
3. Antennal segment two dark brown or black (*rapae* is keyed in both halves of the couplet; segment two in *malaysiana* is quite variable in intensity of coloration) 4
   Antennal segment two lighter, orange, dirty yellow or white 30
4. At least posterior lobe of pronotum medium brown to dark brown or castaneous, often much lighter in apparently teneral specimens; head (except sometimes posterior margin of vertex) unicolorous with pronotum 5
   Pronotum and most of head not medium to dark brown, but nearly white to dirty yellow or red-orange 9
5. Length apex tylus-cuneal fracture 1.90; scutellum light, contrasting with darker portions of dorsum; male genitalia as in figures 1022–1024: Cook Islands: Raratonga .... *raratongana*
   Length apex tylus-cuneal fracture 1.40–1.55; scutellum dark, not contrasting with darker areas of remainder of dorsum 6
6. Coloration along claval suture light, contrasting with darker coloration of much of clavus and endocorium as well as pronotum and scutellum; male genitalia as in figures 1005–1007; Palau Islands .. *palauanensis*
   Coloration along claval suture dark, unicolorous with remainder of clavus and endocorium 7
7. Vestiture of dorsum thick, woolly, appressed, shining; male genitalia as in figures 938–940; Malaya, Northern Borneo .... *malaysiana*
   Vestiture of dorsum composed of reclining common, sometimes weakly shining, setae 8
8. General coloration light brown; male genitalia as in figures 1019–1021; Rapa Island .... *rapae*
   Head, pronotum, scutellum, much of hemelytra, abdomen, and antennal segments one and two black; male genitalia as in figures 1002–1004; Palau Islands ..... *palauana*
9. Entire dorsum red-orange; small species, length apex tylus-cuneal fracture 1.34 (1.23–1.43); male genitalia as in figures 946–948; Philippine Islands, SE Asia, Solomon Islands, Sri Lanka .... *marjorae*
   Coloration of dorsum not uniform red-orange, body usually somewhat longer 10
10. Elongate species, length apex tylus-cuneal fracture 1.86 (1.75–1.98), maximum width .94 (.90–1.00); abdomen slender; antennal segment two much longer than width of head; male genitalia as in figures 841–843; West Irian .... *biak*
    Shorter species, ratio of length-width smaller; length of antennal segment two nearly equal to or less than width of head 11
11. Clavus along mesial margin and entire endocorium dark brown, in strong contrast with much lighter orange red coloration of remainder of dorsum; male genitalia as in figures 1057–1059; Caroline Islands; Yap .... *yapensis*
    Dorsum more or less unicolorous, from nearly white to dirty yellow (sometimes with reddish infusion near base of corium and on cuneus) 12
12. Length of antennal segment two about equal to or greater than width of head 13
    Length of antennal segment two distinctly less than width of head 14
13. Antennal segment one dark, more or less unicolorous with segment two; Java, Philippine Islands .... *monticola* (see also near *monticola*)
    Antennal segment one light, contrasting with dark segment two; male genitalia as in figures 833–835, without spicules; Cook Islands, Aitutaki .... *aitutaki*
14. Male genitalia as in figures 1051–1053; dorsum dirty yellow with reddish suffusion at base of corium and on mesial margin of clavus; Caroline Islands, Ulithi Atoll .... *ulithiensis*

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[3] *Campylomma chichijima* Carvalho and *C. ponapensis* Carvalho are not included in the key.

Male genitalia as in figures 907–910; dorsum dirty white to yellowish; Palua Islands, Koror .... *kororensis*

15. Genital capsule with a short thumblike process on left side 16

Genital capsule without thumblike process 19

16. Length of antennal segment two equal to or less than width of head; length apex tylus-cuneal fracture 1.80 or less 17

Length of antennal segment two distinctly greater than width of head; length apex tylus-cuneal fracture over 2.00 18

17. Length apex tylus-cuneal fracture 1.65–1.80; male genitalia as in figures 866–868; China, Fukien; Hong Kong .... *chinensis*

Length apex tylus-cuneal fracture 1.60–1.63; male genitalia as in figures 921–924; India, Sri Lanka, Philippine Islands ...... *livida*

18. Length of antennal segment two approximately 1.25 times width of head; male genitalia as in figures 987–989; New Ireland .... *novoirlandense*

Length antennal segment two approximately 1.15 times width of head; Philippine Islands, Eastern New Guinea ..... *luzonica*

19. At least distal one-fifth of antennal segment two black 20

Antennal segment two light, unicolorous, except for black basal ring 25

20. Antennal segment two without a black basal ring 21

Antennal segment two with a black basal ring 23

21. Dorsum with a deep red (near castaneous) and white marmorate pattern (figure 942); male genitalia as in figures 949–951; New Guinea .... *marmorosa*

Dorsum not marmorate, mostly brown or castaneous 22

22. Dorsum medium brown, cuneus reddish; male genitalia as in figures 1033–1035; New Caledonia .... *sclephracantha*

Dorsum castaneous except for lighter posterior margin of vertex; male genitalia as in figures 850–852; Bonin Islands .. *boharti*

23. Head, except vertex, and pronotum castaneous, strongly contrasting with yellowish scutellum and hemelytra, male genitalia as in figures 853–855; Bonin Islands .... *boninensis*

Scutellum infuscate or brown, pronotum either dirty yellow or unicolorous with scutellum 24

24. Pronotum and scutellum brown; male genitalia as in figures 990–992; New Hebrides, Samoa, Tonga .... *pacificae*

Pronotum dirty yellow, scutellum infuscate or dark brown; male genitalia as in figures 981–983; Kermadec Islands, New Caledonia .... *novocaledonica*

25. Dorsum brown; labium reaching only to procoxae; claws strongly cleft basally (fig. 998); Eastern New Guinea .... *papuana*

Dorsum not brown; labium reaching to mesocoxae or beyond; claws not strongly cleft 26

26. Coloration of dorsum yellow-orange; blades of vesica not well sclerotized and distinct as in most *Campylomma* species, with some spicules (fig. 904); New Guinea .. *irianica*

Dorsum dirty yellow to nearly white; vesica with distinct blades without spicules 27

27. Anterior vesical blade much shorter than posterior; posterior blade nearly straight (figs. 929, 930); India, New Guinea, Philippine Islands .... *lividicornis*

Vesical blades more nearly equal in length 28

28. Anterior vesical blade about two-thirds length of posterior 29

Vesical blades subequal in length (fig. 964); Gilbert Islands, Marshall Islands, Phoenix Islands .... *marshallensis*

29. Vesical blades as in figure 975; New Caledonia .... *noumaeae*

Vesical blades as in figure 1054; Wake Island (see also couplet 51) .... *wakeana*

30. Head strongly flattened anteroposteriorly, very short in dorsal view, posterior margin of vertex carinate; dorsum shining black 31

Head transverse, but not so strongly flattened anteroposteriorly, posterior margin of vertex rounded, not finally carinate; dorsum not entirely shining black 32

31. All femora white to weakly reddish; male genitalia as in figures 838–840; Philippine Islands .... *atra*

All femora black or nearly so; male genitalia as in figures 972–974; western New Guinea; Guadalcanal .... *nigra*

32. Length apex tylus-cuneal fracture usually greater than 1.80 (but see *marquesana, sandaracine,* and *tahitica*), and/or length of antennal segment two usually greater than width of head (but see *hivaoae* and *tahitica*); all known taxa except *sandaracine* from Marquesas and Society Islands 33

Length apex tylus-cuneal fracture usually less than 1.75, often less than 1.60; length antennal segment two never greater than width of head; diverse localities 36

33. Longer vesical blade serrate on dorsal margin (fig. 1030a, b); apex of vesica with retrorse

barbs (fig. 1030a, b); dorsum orange-red with small brown spots; New Guinea .... *sandaracine*

Vesical blades not serrate, apex of vesica without retrorse barbs; coloration of dorsum variable, never distinctly orange-red, never spotted 34

34. Vesical blades flattened, in the same plane, relatively short and broad, anterior blade shorter than posterior (fig. 901); large species, over 1.80; hemelytra usually distinctly reddish; labium reaching to or slightly surpassing apex of metacoxae 35

Vesical blades, if short and broad, somewhat twisted (figs. 914, 1039a, b), usually rather long and attenuated (figs. 884, 885), or very broad and flat, but with anterior blade longer than posterior (fig. 1042a, b); size variable; dorsum sometimes with reddish coloration usually on cuneus; length of labium variable 37

35. Length of antennal segment two approximately equal to width of head; neither vesical blade upturned apically (fig. 901); Marquesas Islands .... *hivaoae*

Length of antennal segment two always greater than width of head; at least anterior vesical blade upturned apically (figs. 934, 1042a, b) 36

36. Only anterior vesical blade upturned apically (fig. 934); Marquesas Islands .... *longirostris*

Anterior and posterior vesical blades upturned apically (fig. 1042a, b); Marquesas Islands .... *tinctipennis*

37. Vesical blades relatively short and stout, not strongly flattened, posterior blade longer than anterior (figs. 914, 915, 1039a, b) 38

Vesical blades relatively long and slender (figs. 888, 891, 1025), sometimes very long (fig. 885), or occasionally very broad and flat (fig. 878) 39

38. Length apex tylus-cuneal fracture approximately 2.00; length antennal segment two greater than width of head; male genitalia as in figures 914–917; Society Islands .... *kraussi*

Length apex tylus-cuneal fracture 1.50–1.80; length antennal segment two slightly less than width of head; male genitalia as in figures 1039–1041; Society Islands .... *tahitica*

39. Vesical blades very slender, almost needle-like, subequal in length 40

Vesical blades elongate, not needle-like, of conspicuously unequal lengths 41

40. Hemelytra usually heavily infuscate; length apex tylus-cuneal fracture 1.93–2.30; male genitalia as in figures 884–887 (see also figs. 888–893); Marquesas Islands ...... *fusca*

Hemelytra dirty orange to reddish, not infuscate; length apex tylus-cuneal fracture 1.75–1.93; male genitalia as in figures 1025–1027; Marquesas Islands .... *rubrotincta*

41. Both vesical blades strongly flattened, anterior longer than posterior, hooklike (fig. 878); cuneus infuscate; length apex tylus-cuneal fracture 1.85–1.93; Marquesas Islands .... *cuneolata*

Vesical blades as in figures 856 and 955 not strongly flattened, anterior blade shorter than posterior; cuneus not infuscate, sometimes red on mesial margin; length apex tylus-cuneal fracture 1.58–2.00 42

42. Mesial margin of cuneus and veins of membrane red or reddish; male genitalia as in figures 856–858; length apex tylus-cuneal fracture 1.83–1.89, antennal segment two .80–.94; Marquesas Islands ..... *breviata*

Mesial margin of cuneus not red; male genitalia as in figures 955–957; species variable in size and length of antennal segment two; Marquesas Islands .... *marquesana*

43. Pronotum and head, except for posterior margin of vertex, castaneous; scutellum and most of hemelytra contrasting, lighter (fig. 848); Mariana Islands ..... *brunneicollis*

Dorsum more or less unicolorous, from white to medium brown 44

44. Dorsum unicolorous medium brown, sometimes lighter brown 45

Dorsum unicolorous light yellow-orange, dirty yellow, or nearly white 46

45. Length apex tylus-cuneal fracture 1.43–1.50; male genitalia as in figures 872–874; Cook Islands .... *cookensis*

Length apex tylus-cuneal fracture 1.53–1.73; male genitalia as in figures 1019–1021; Rapa Island (French Polynesia) .... *rapae*

46. Width of head .80 times width of pronotum (.75/.90); vesica with an apical "spine" instead of "blades" (fig. 984): New Hebrides .... *novohebridense*

Width of head not greater than .75 times width of pronotum; vesica with distinct apical blades 47

47. Labium distinctly surpassing apex of metacoxae and reaching onto abdomen ... 48

Labium often reaching or at most slightly surpassing apex of metacoxae 49

48. Anterior vesical blade nearly straight, not upturned apically (fig. 967); Marquesas Islands .... *minuenda*

Anterior vesical blade sinuous in form, upturned apically (fig. 1008); Mariana Islands .... *pallida*

49. Very small species, length apex tylus-cuneal fracture under 1.40 50
  Larger species, length apex tylus-cuneal fracture very near 1.45 or greater, often over 1.50 52

50. Basic coloration white; genitalia not dissected; Caroline Islands, Truk ...... *carolinensis*
  Basic coloration yellow-white or yellow-orange 51

51. Basic coloration yellow-orange; male genitalia as in figures 918–920; Philippine Islands, Leyte .... *leyteana*
  Basic coloration dirty yellow-white; male genitalia as in figures 898–900; Solomon Islands, Guadalcanal ...... *guadalcanalica*

52. Labium reaching only to mesotrochanters; vesica with relatively short and smoothly curved unequal length blades (fig. 859); Mariana Islands .... *breviceps*
  Labium longer, reaching to apex of metacoxae; at least posterior blade of vesica relatively long (figs. 881, 1045, 1054) 53

53. Average length apex tylus-cuneal fracture 1.50 (range 1.43–1.55); male genitalia as in figures 1045–1047; Mariana Islands, Tinian .... *townesi*
  Larger species, average length greater than 1.60 (range 1.50–1.73) 54

54. Male genitalia as in figures 881–883; Marshall Islands, Eniwetok Atoll .... *eniwetok*
  Male genitalia as in figures 1054–1056; Wake Island .... *wakeana*

Campylomma aitutaki, new species

Figures 811, 824, 833–835

DIAGNOSIS: Recognized among those species with a unicolorous black antennal segment two by the almost white general coloration, and the form of the vesical blades (fig. 833) which are most similar to those of *cookensis*.

DESCRIPTION: Macropterous male. Body form elliptical, length apex tylus-cuneal fracture 1.53, maximum width pronotum 0.85; general coloration almost white; antennal segment two black; spines and bases of spines on antennal segment one, all femora and tibiae, and bases of meso- and meta-femoral trichobothria black.

Dorsum smooth, weakly shining, hemelytra subhyaline, dorsum covered with reclining, white, common setae.

Frons nearly straight across in dorsal view; labium reaching to between meso- and metacoxae; spicules on dorsal surface of metafemur black, in a neat uninterrupted row; parempodia setiform, weakly curved, and sharply convergent apically.

MALE GENITALIA: Figures 833–835. Vesical blades superposed, dorsal blade slender, attenuated, smoothly curved, ventral blade broader, sinuous, attenuated apically, not sclerotized basally; vesica highly three-dimensional, apical blades similar in form to those of *cookenesis* except for base of ventral blade.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on Aitutaki, Cook Islands; a noun in apposition.

DISTRIBUTION: Figure 811. Cook Islands.

HOLOTYPE ♂: COOK ISLANDS: *Aitutaki:* Vaipeka, August 28, 1969, swept, K. A. J. Wise collector; deposited in the Auckland Museum, Auckland, New Zealand.

PARATYPES: COOK ISLANDS: *Aitutaki:* Maina Islet, September 3, 1969 (Wise; Auckland), 1♂; Molura Kau Islet, August 29, 1969 (Wise; Auckland), 1♂.

Campylomma atra, new species

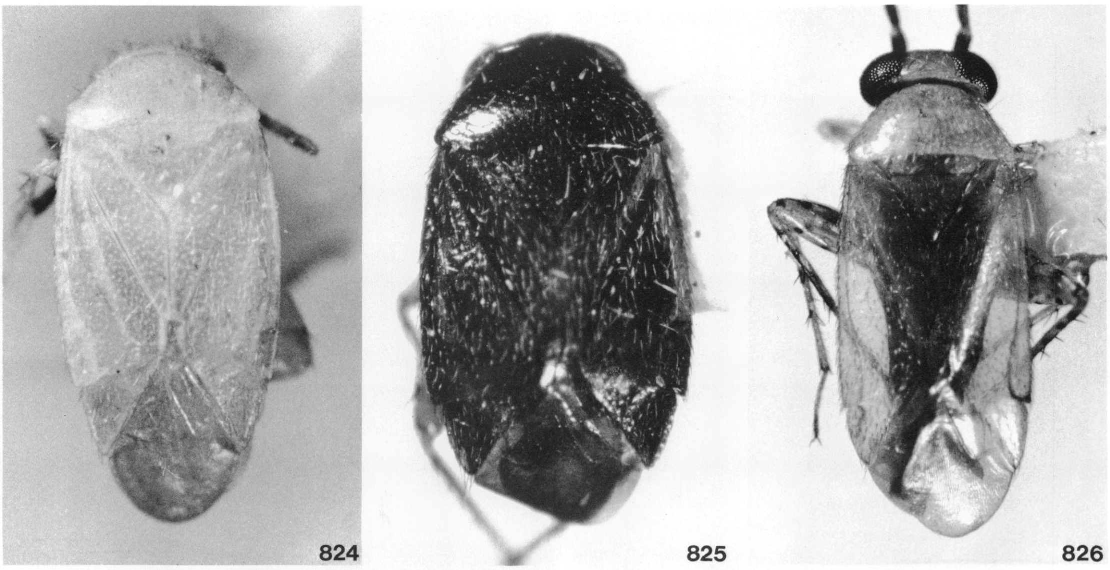
Figures 808, 825, 827–831, 836–840

DIAGNOSIS: Recognized by the strongly ovoid shape, very short anteroposteriorly flattened head, shining black body with reddish legs, and nearly white antennae, in combination with the form of the vesical blades (fig. 838).

DESCRIPTION: Macropterous male. Body ovoid, broad, length apex tylus-cuneal fracture 1.65, width pronotum 1.03; shining black, antennae nearly white; coxae weakly reddish brown, femora strongly reddish, tibiae and tarsi pale.

Dorsal surface smooth, shining, distinctly rugulose; vestiture of rather long, reclining setae, and some flattened silvery, shining, almost scalelike setae on clavus and corium (these generally distributed, but apparently easily rubbed); femora with numerous setae and black spines distally with black bases; meso- and meta-femoral trichobothria without conspicuous black bases; tibiae with heavy black spines with black bases.

Head strongly flattened anteroposteriorly,



FIGS. 824–826. *Campylomma* spp. 824. *C. aitutaki*, holotype. 825. *C. atra*, holotype. 826. *C. biak*, holotype.

posterior margin of vertex vertical, finely carinate, weakly curving between posteromesial angles of eyes; clypeus not visible from above; eyes occupying nearly entire sides of head in lateral view; pronotum distinctly rounded longitudinally and transversely; hemelytra rounded transversely; cuneal fracture relatively deep; metafemora strongly enlarged as in figures 828 and 831 (resembling those of *Decomia*); meso- and meta-femoral trichobothria as in figures 830 and 831; spicules on dorsal surface of metafemora black, in an irregular row, somewhat obscured by rather long, dark setae covering most of femora (fig. 838); parempodia setiform and apparently very weakly convergent apically (fig. 827).

MALE GENITALIA: Figures 838–840. Vesica S-shaped, twisted, with two elongate, slender, apical spines, secondary gonopore well developed; phallotheca L-shaped.

FEMALE: Macropterous. Similar to male except as noted in generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Latin, *atra*, black.

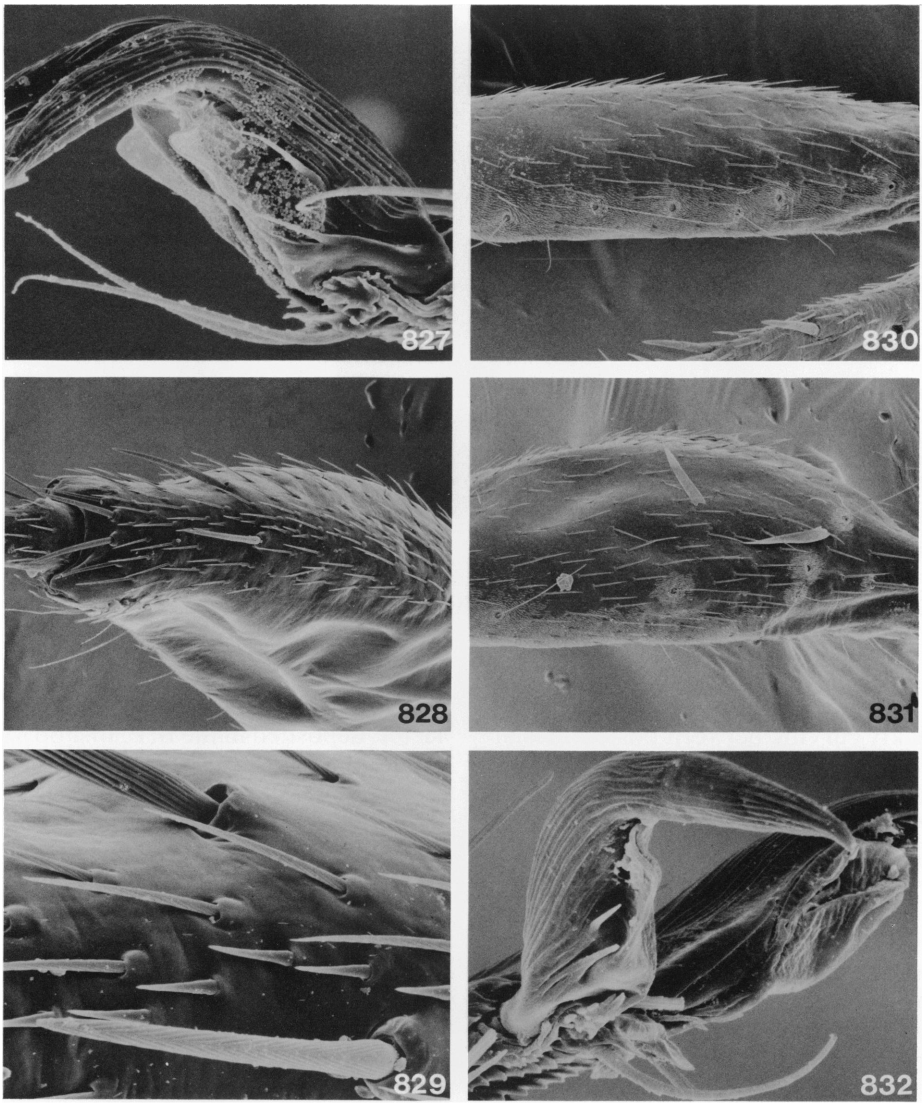
DISTRIBUTION: Figure 808. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Mindanao:* Misamis Oriental, Gingoog, May 12, 1961, light trap, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: PHILIPPINE ISLANDS: *Mindanao:* Misamis Oriental: Dinawihan Gingoog, 26 km. E of Gingoog City, 100–300 m., August 14–30, 1965 (Torrevillas; Bishop), 2♂♂; Mt. Pomalihi, 21 km. W of Gingoog City, 800–1000 m., October 27, 1965, light trap (Torrevillas; Bishop), 1♂. *Negros Island:* Dumaguete City, September 26–29, 1959, light trap (Quate and Yoshimoto; Bishop), 3♂♂, 3♀♀; Dumaguete, Camp Lookout, February 15–April 15, 1961 (Schneirla and Reyes; AMNH), 2♂♂, 10♀♀.

DISCUSSION: *Campylomma atra* and its apparently closest described relative *C. nigra* are unusual in appearance within the genus, having a strongly anteroposteriorly flattened head, the body flattened and broadly ovate, and the jet black and highly polished body surface. Superficially they resemble closely *Lamprosthenarus* Poppius from Africa. The male genitalia of *Lamprosthenarus* are *Campylomma*-like, but since I have no specimens with metafemora, it is impossible to determine whether the row of spicules on the metafemora are present in that named group.

A single male specimen from Malaya, Kua-



FIGS. 827–832. *Campylomma* spp. 827–831. *C. atra.* 827. Pretarsus. 828. Dorsodistal view of metafemur showing row of spicules. 829. Detail of metafemoral spicules. 830. Mesofemur, showing trichobothria. 831. Metafemur, showing trichobothria. 832. *C. biak,* pretarsus.

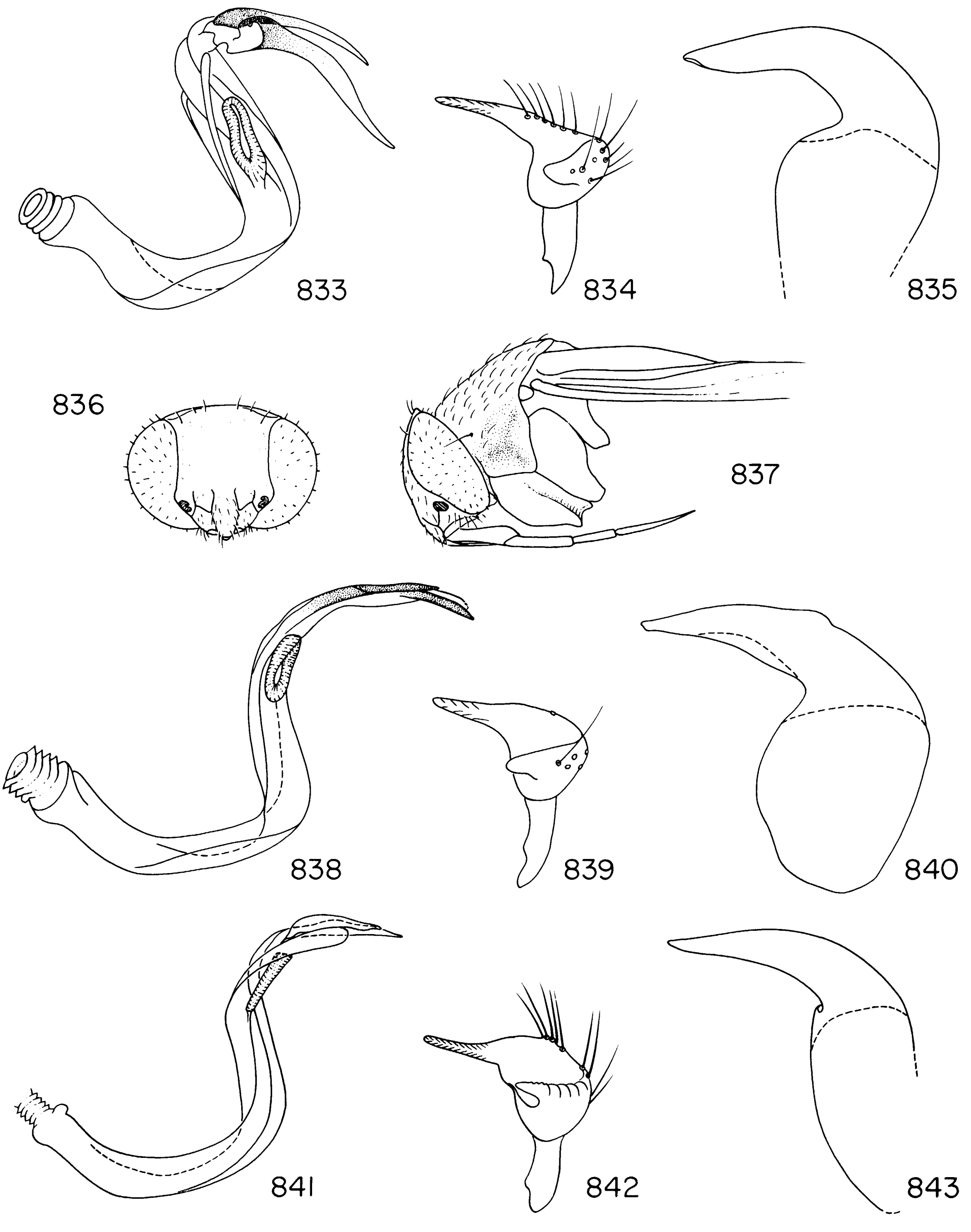
la Lumpur (Bishop), resembles *nigra* in general shape and coloration, and another from the Solomon Islands, Malaita (Bishop), has all the appendages unicolorous with the shiny black body.

Campylomma biak, new species

Figures 809, 826, 832, 841–843

DIAGNOSIS: Recognized by the almost totally black antennae, the rectangular head as viewed from above with the eyes somewhat removed from the anterolateral angles of the pronotum, the long slender abdomen, the infuscate scutellum and clavus, and the form of the vesical blades.

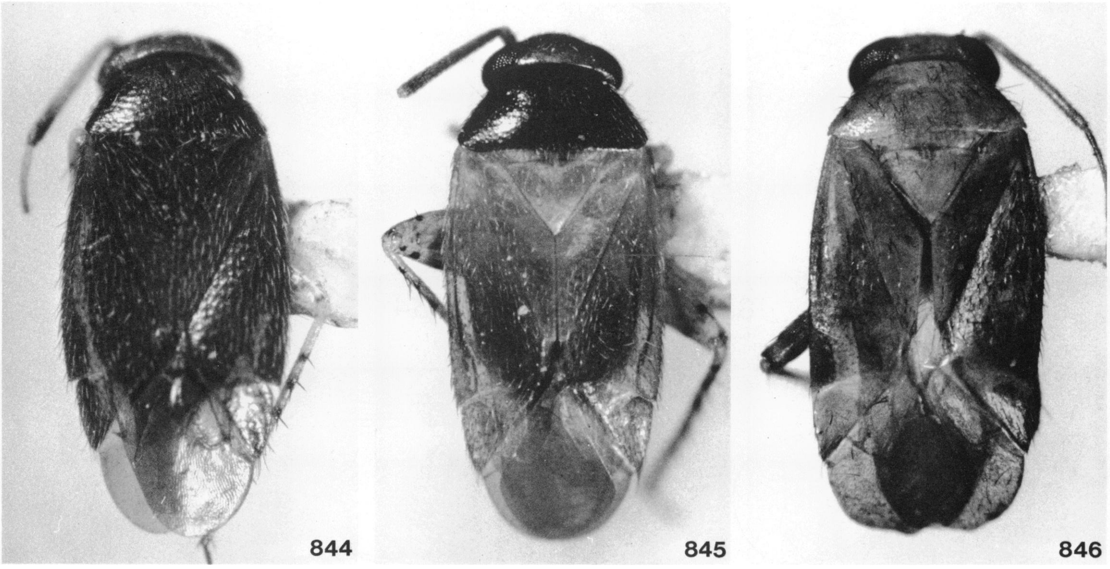
DESCRIPTION: Macropterous male. Body form elongate, parallel-sided, length apex tylus-cuneal fracture 1.86, width pronotum 0.89; general coloration yellow-orange to orange-brown; antennae (except segment one basally and distally) black; scutellum and cla-



FIGS. 833–843. *Campylomma* spp. 833–835. *C. aitutaki*. 833. Vesica. 834. Left paramere. 835. Phallotheca. 836–840. *C. atra*. 836. Frontal view of head, ♂. 837. Lateral view of head and prothorax, ♂. 838. Vesica. 839. Left paramere. 840. Phallotheca. 841–843. *C. biak*. 841. Vesica. 842. Left paramere. 843. Phallotheca.

vus infuscate; spines on femora and tibiae and meso- and meta-femoral trichobothria with large black bases.

Dorsum smooth, head and pronotum weakly shining, hemelytra dull; dorsum generally with reclining dark setae, some woolly weakly shining setae along claval suture; tibiae with heavy black spines.



FIGS. 844–846. *Campylomma* spp. 844. *C. boharti,* ♂, Bonin Islands, Chichi Jima, Sakai-Ura. 845. *C. boninensis,* ♂, Bonin Islands, Chichi Jima, Omura. 846. *C. breviata,* holotype.

Head more or less transversely rectangular in dorsal view; eyes very large in dorsal view, rounded laterally, nearly straight on mesial and posterior margins, somewhat removed from anterolateral pronotal angles; posterior margin of vertex not carinate; tylus at most barely visible from above; labium not quite attaining apex of mesocoxae; abdomen long and slender; spicules on dorsal surface of metafemora black, in a neat row; parempodia setiform, not convergent apically (fig. 832).

MALE GENITALIA: Figures 841–843. Vesical blades relatively short, subequal in length; one of vesical "bands" projecting to about midpoint of apical blades; phallotheca not strongly bent, in the form of an open "v"; left paramere rather short.

FEMALE: Macropterous. Body form more or less ovoid, lateral hemelytral margins distinctly rounded; eyes much smaller than in males, more nearly contiguous with anterolateral pronotal angles; coloration less strongly orangish than in males, antennal segment one black only at bases of spines.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Biak Island, eastern New Guinea; a noun in apposition.

DISTRIBUTION: Figure 809. Western New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Biak Island, Mokmer, 5–10 m., May 26, 1959, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 2♂♂, 2♀♀. INDONESIA: *West Irian:* Biak Island, Biak airport, May 19–24, 1959 (Maa; Bishop), 1♂; Hollandia, February 28, 1960, MV light trap (Maa; Bishop), 1♂.

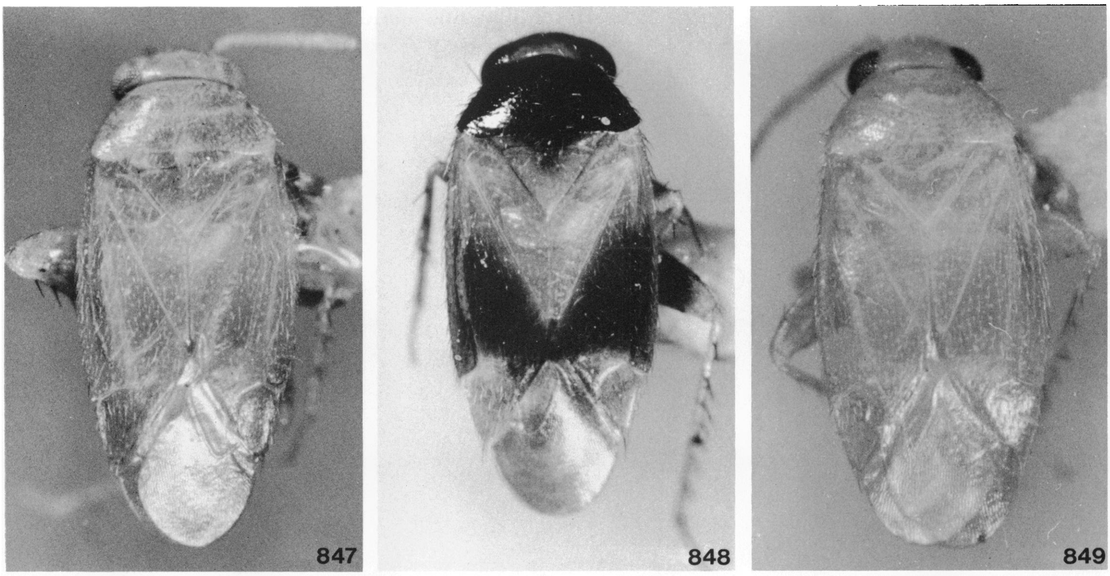
Campylomma boharti Carvalho

Figures 811, 844, 850–852

Campylomma boharti Carvalho, 1956b, p. 33.

DIAGNOSIS: Recognized by its generally castaneous coloration with light appendages except for the nearly black distal one-fourth of antennal segment two (and castaneous coxae), and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body form moderately elongate, length apex tylus-cuneal fracture 1.58, width pronotum 0.80; just anterior to cuneal fracture; generally castaneous, vertex somewhat lighter; appendages, except coxae, generally yellow-white;



FIGS. 847–849. *Campylomma* spp. 847. *C. breviceps,* ♂, Mariana Islands, Guam, Mt. Lam Lam. 848. *C. brunneicollis,* ♂, Mariana Islands, Guam, Mt. Lam Lam. 849. *C. carolinensis,* holotype.

distal one-fourth of antennal segment two nearly black; femoral and tibial spines black with black bases; meso- and meta-femoral trichobothria with dark bases.

Dorsum smooth, at most very weakly shining, distinctly rugulose; dorsum with reclining light-colored setae.

Anterior margin of head distinctly rounded in dorsal view; posterior margin of vertex rounded, curved; posterior margin of eyes contiguous with anterior pronotal margin; labium reaching to about apices of mesocoxae; cuneus strongly rounded basally, cuneal fracture deep; spicules on dorsal surface of metafemora black, in a neat row; parempodia setiform, distinctly curved and convergent apically.

MALE GENITALIA: Figures 850–852. Anterior vesical blade relatively broad, sinuous, posterior blade more elongate, straight on distal two-thirds and lanceolate; phallotheca strongly C-shaped.

FEMALE: Macropterous. Structurally similar to male, body form somewhat broader, more ovoid.

FEMALE GENITALIA: Posterior wall simple.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 811. Bonin Islands, Chichi Jima.

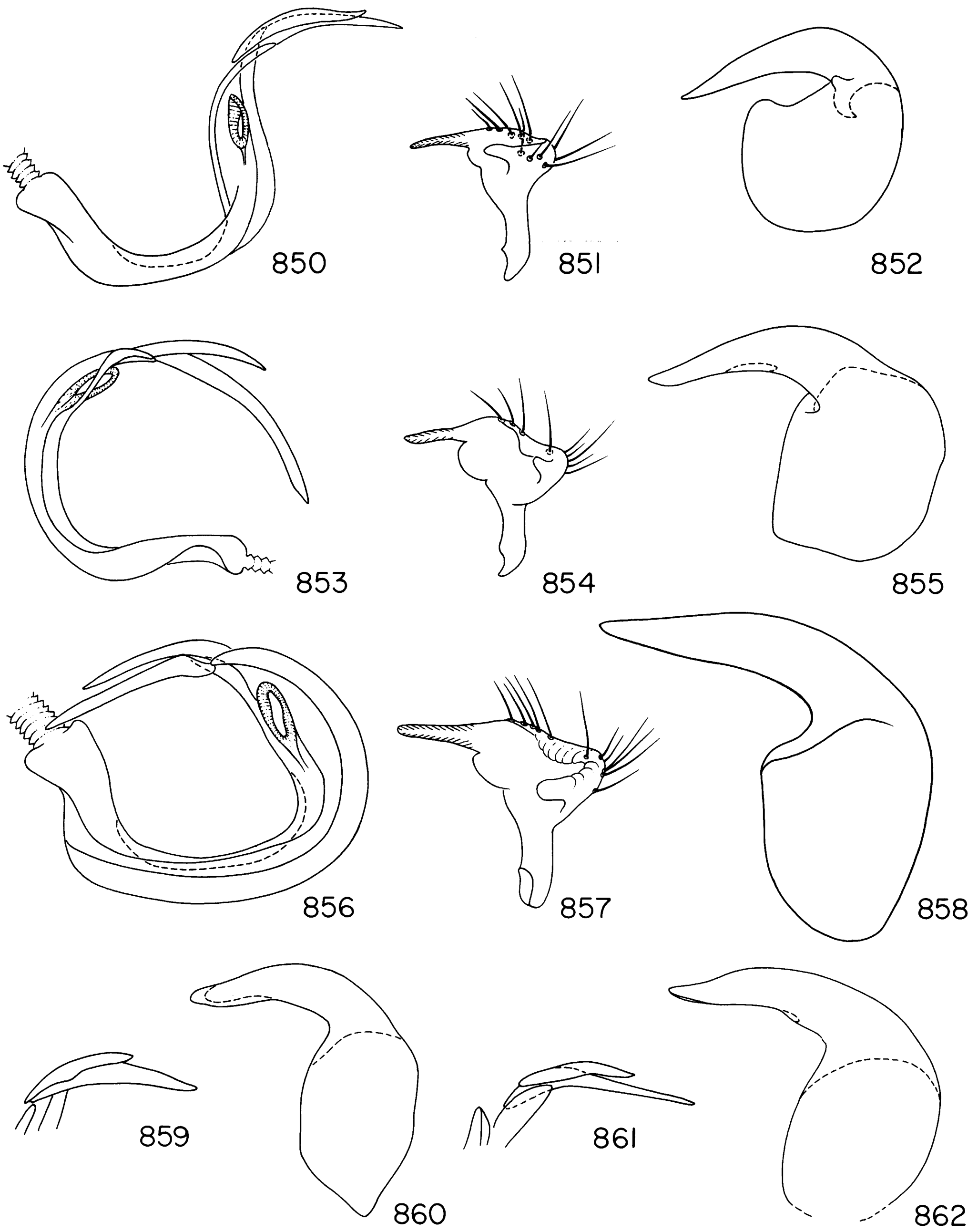
SPECIMENS EXAMINED: BONIN ISLANDS: *Chichi Jima:* Miyanohana, "Jack William's Beach," April 15–21, 1958 (Snyder; Bishop), 1♂; Okumura, "Yankee Town," May 12, June 9, 1968 (Snyder; Bishop), 2♀♀; Omura, "Camp Beach," April 2–25, 1958, May 5–June 9, 1958 (Snyder; AMNH Bishop), 8♂♂, 6♀♀; Sakai-ura, "Bull Beach," May 12–31, 1958 (Snyder; AMNH, Bishop), 11♂♂, 7♀♀; Yatsuse River (Minato Ko), "General's Beach," April 10–22, 1958 (Snyder; Bishop), 2♀♀.

Campylomma boninensis Carvalho
Figures 811, 845, 853–855

Campylomma boninensis Carvalho, 1956b, p. 34.

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two by the dark brown head and pronotum with contrasting yellow-brown hemelytra and the elongate unequal-length vesical blades.

DESCRIPTION: Macropterous male. Body stocky, parallel-sided, length apex tylus-cuneal fracture 1.54, width pronotum 0.83; head (except posterior margin of vertex), and pronotum castaneous; mesopleuron and mesosternum and abdomen dark brown; antennal segment one with a black basal ring



FIGS. 850–862. *Campylomma* spp. male genitalia. 850–852. *C. boharti*. 850. Vesica. 851. Left paramere. 852. Phallotheca. 853–855. *C. boninensis*. 853. Vesica. 854. Left paramere. 855. Phallotheca. 856–858. *C. breviata*. 856. Vesica. 857. Left paramere. 858. Phallotheca. 859, 860. *C. breviceps*. 859. Apex of vesica. 860. Phallotheca. 861, 862. *C. brunneicollis*. 861. Apex of vesica. 862. Phallotheca.

and black distal one-fourth (segment sometimes appearing nearly totally black); scutellum, hemelytra, metapleura and sternum, and remainder of appendages including coxae, light yellow-brown; spines on interior surface of antennal segment one and on femora and tibiae black with black bases; meso- and metafemora with dark brown trichobothrial bases and additional dark brown markings.

Dorsal surface smooth, dull, faintly rugulose, with relatively short, reclining light setae.

Head transverse, not strongly rounded in dorsal view; posterior margin of vertex rounded, curved, posterior margin of eyes and vertex more or less contiguous with anterior pronotal margin; labium reaching to about apex of metacoxae; parempodia very weakly enlarged, curving, convergent apically.

MALE GENITALIA: Figures 853–855. Posterior vesical blade about two times length of anterior, both blades gradually decreasing in width toward apex, gently curved; phallotheca more or less L-shaped.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 811. Bonin Islands, Chichi Jima and Haha Jima.

SPECIMENS EXAMINED: BONIN ISLANDS: *Chichi Jima:* Miyanohama, "Jack William's Beach," May 12–June 9, 1958 (Snyder; Bishop), 1♂; Omura, "Camp Beach," May 5–June 9, 1958 (Snyder; AMNH, Bishop), 3♂♂. *Haha Jima:* Okimura, April 26–June 9, 1958 (Snyder; Bishop), 2♂♂.

Campylomma breviata Knight
Figures 811, 846, 856–858

Campylomma breviata Knight, 1938b, p. 185.

DIAGNOSIS: Recognized among the species with a unicolorous light antennal segment two by its relatively large size, the relatively short labium extending to the apex of the mesocoxae, the corium usually reddish laterally and cuneus posteriorly, and the form of the vesical blades; vesica similar in structure to that of *marquesana.*

DESCRIPTION: Macropterous male. Body form elongate elliptical, length apex tylus-cuneal fracture 1.89, width pronotum 1.02; dorsum generally yellow orange, appendages yellowish, except antennal segments three and four brown; exocorium, cuneus posteriorly and on mesial margin, and veins of smaller cell of membrane usually reddish; thoracic pleuron and abdomen infuscate; membrane usually smoky; black spines on femora and tibiae without conspicuous black bases; outer surface of distal one-third of metafemur with heavy dark brown spotting, including bases of trichobothria.

Dorsum smooth, dull, covered with relatively long, nearly black, reclining setae and subappressed, slightly flattened, shining setae.

Frons nearly straight across as viewed from above; labium reaching to apex of mesocoxae; spicules on dorsal surface of metafemora black, in a neat row; parempodia enlarged, strongly curved, and conspicuously flattened and convergent apically (more or less of form in *Ellenia obscuricornis*).

MALE GENITALIA: Figures 856–858. Vesical blades elongate, nearly striaght, subequal in length, very similar in form to *marquesana.*

FEMALE: Not positively identified.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 811. Marquesas Islands: Hivaoa, Ua Huka, and Uapou.

SPECIMENS EXAMINED: MARQUESAS ISLANDS: *Hivaoa:* Kaava Ridge, 2000 feet, October 27, 1931, beating on *Glochidium ramiflorum* (LeBronnec; Bishop), 1♂ (holotype). *Ua Huka:* Tau Keeputa, 1770 feet, March 23, 1931, *Glochidium ramiflorum* (LeBronnec and Taura; Bishop), 1♂. *Uapou:* Teananua Pass, November 26, 1931, 2900 feet, at light (LeBronnec; Bishop), 1♂; Teoatea, Hakahetau Valley, 2000 feet, November 19, 1931 (LeBronnec; Bishop), 1♂.

DISCUSSION: See *marquesana.*

Campylomma breviceps Usinger
Figures 811, 847, 859, 860

Campylomma breviceps Usinger, 1946, p. 88; Carvalho, 1956b, p. 34.

DIAGNOSIS: Recognized among those species with a unicolorous light antennal segment two by its totally light coloration (with the exception of the femoral spots and black tibial spines), dimensions, and the form of the vesical blades; the labium is much shorter than in *pallida,* which is also known from Guam.

DESCRIPTION: Macropterous male. Body form elongate elliptical, length apex tylus-cuneal fracture 1.57, width pronotum 0.83; totally light dirty yellow or yellow-white, except brown spots at bases of meso- and meta-femoral spines and trichobothria and the black tibial spines (without black bases).

Dorsum smooth, weakly shining, hemelytra somewhat hyaline; dorsum covered with relatively short, light, reclining, simple setae.

Frons bulging slightly in front of eyes in dorsal view; abdomen broadly joined to thorax, not narrowed; labium just reaching metatrochanters; spicules on dorsal surface of metafemora dark brown, in an uninterrupted, somewhat irregular row; parempodia at most very slightly enlarged, weakly curved, distinctly convergent apically.

MALE GENITALIA: Figures 859 and 860. Vesical blades relatively broad, evenly and gently curved, anterior much shorter than posterior.

FEMALE: Not positively identified.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 811. Mariana Islands, Guam; recorded by Carvalho (1956) from Tinian.

SPECIMENS EXAMINED: MARIANA ISLANDS: *Guam:* Cocos Island, December 1957 (Krauss; Bishop), 1♂; Mt. Lamlam, October 1952 (Krauss; Bishop), 1♂; Pt. Ritidian, August 1, 1945, light trap (Gressitt; USNM), 1♂; Mt. Sta. Rosa, June 3, 1945 (Bohart and Gressitt; Bishop), 1♂.

DISCUSSION: The specimens listed above have not been compared with the holotype male which is deposited in the B. P. Bishop Museum, but agree substantially with Usinger's original description. I was unable to locate paratypes of this species.

Usinger (1946) listed this species as occurring on *Hibiscus tiliaceus.*

Campylomma brunneicollis Usinger

Figures 811, 848, 861, 862

Campylomma brunneicollis Usinger, 1946, p. 90; Carvalho, 1956b, p. 34.

DIAGNOSIS: Recognized among those species with a totally light antennal segment two by the dark head (with light vertex) and pronotum with contrasting lighter colored hemelytra, as well as by the form of the vesical blades. Similar in general appearance to *boninensis,* but differs in having totally light antennae and distinctive vesical structure.

DESCRIPTION: Macropterous male. Body form elongate elliptical, length apex tylus-cuneal fracture 1.51, width pronotum 0.81; head, except vertex, pronotum, thoracic pleura, and abdomen castaneous; posterior two-thirds of corium often infuscate; corium at cuneal fracture sometimes red; vertex, scutellum, clavus and corium (anteriorly), antennae, labium, prolegs including coxae, mesofemora and tibiae, and metatibiae, and all trochanters yellowish; metafemora heavily infuscate except proximally and distally where concolorous with trochanters and tibiae.

Dorsum very smooth, pronotum shining, hemelytra dull; dorsum covered with neat, reclining, light brown common setae.

Frons and eyes forming a smooth curve in dorsal view; labium reaching apex of metacoxae; spicules on dorsal surface of metafemora black, obscure, in a weakly undulating row; parempodia weakly enlarged, curved, converging apically.

MALE GENITALIA: Figures 861 and 862. Anterior vesical blade much shorter than posterior, posterior straight on apical three-fourths and evenly tapered to sharp point.

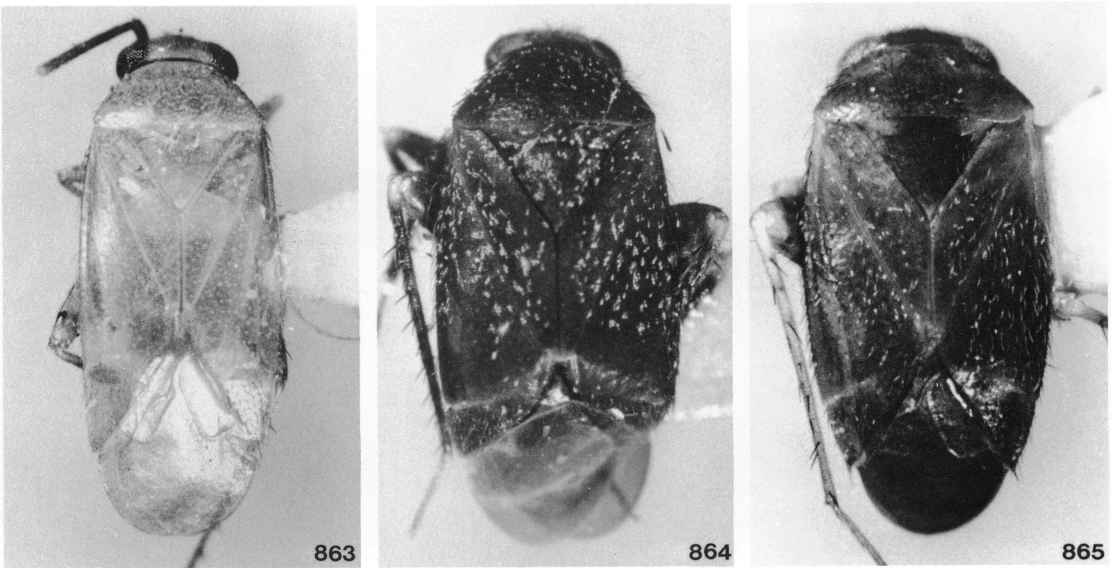
FEMALE: Macropterous. Structurally similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 811. Mariana Islands, Guam, Saipan; also recorded by Carvalho (1956b) from Pagan.

SPECIMENS EXAMINED: MARIANA ISLANDS: *Guam:* Anderson Air Force Base, August 1952 (Krauss; AMNH, Bishop), 5♂♂, 1♀; Mt. Alifan, May 21, 1936 (Usinger; Bishop), 2♂♂; Mt. Chachod, June 21, 1950 (Adams; AMNH, Bishop), 2♂♂, 6♀♀; Mt. Lamlam, February 1958 (Krauss; Bishop), 3♂♂, 1♀; Mt. Santa Rosa, June 1945 (Gressitt and Bohart), 1♂, 1♀; Mt. Tenjo, May 3, 1936, ex *Scaevola* (Usinger; Bishop), 1♂; Pilgo River, May 26, 1945 (Bohart and Gressitt; Bishop), 1♀; Piti, April 30, 1936 (Usinger; Bishop), 1♂; Point Ritidian, June 2, 1945 (Bohart and Gressitt; Bishop), 1♀; Point Ylig, May 19, 1945 (Bohart and Gressitt; Bishop), 1♀; Pt. Oca, July 1945 (Gressitt, Bohart; Bishop), 1♀. *Saipan Island:* Chelan Laulau, April 26, 1946 (Krauss; Bishop), 1♂; Charanka, October 31, 1967 (Esaki; Bishop), 1♀; Laulau Bay, January 5, 1945 (Dybas; Field), 2♂♂, 2♀♀; Magicienne Bay, January 1, 1945 (Dybas; Field), 2♀♀; Matansha-Calabera, October 8, 1940



FIGS. 863–865. *Campylomma* spp. 863. *C. chinensis,* ♂, paratype. 864. *C. collina,* ♂, paratype. 865. *C. cookensis,* holotype.

(Yasu and Yoshi; Bishop); 1♀; Pago Bay, June 2, 1945 (Dybas; Field), 2♂♂.

Campylomma carolinensis Carvalho
Figures 811, 849

Campylomma carolinensis Carvalho, 1956b, p. 36.

DIAGNOSIS: Among those species with generally light coloration and a completely light colored second antennal segment, *carolinensis* can be recognized by its small size (length apex tylus-cuneal fracture 1.40, width pronotum 0.75), the labium which at most slightly surpasses the apices of the metacoxae, and its white coloration.

MALE GENITALIA: Not dissected; see discussion.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 811. Caroline Islands: Truk Atoll.

SPECIMENS EXAMINED: CAROLINE ISLANDS: *Truk Atoll:* Moen Island, Mt. Eroken, north, 80 m., February 6, 1953, light trap (Gressitt; USNM), 1♂ (holotype).

DISCUSSION: The only apparently available specimen of *carolinensis* is the holotype male. I have not dissected the genitalia. This species runs in the key with a number of very similar appearing Pacific species, including *breviceps, eniwetok, guadalcanalica, leyteana, minuenda, pallida,* and *townesi.*

Campylomma chichijima Carvalho

Campylomma chichijima Carvalho, 1956b, p. 36.

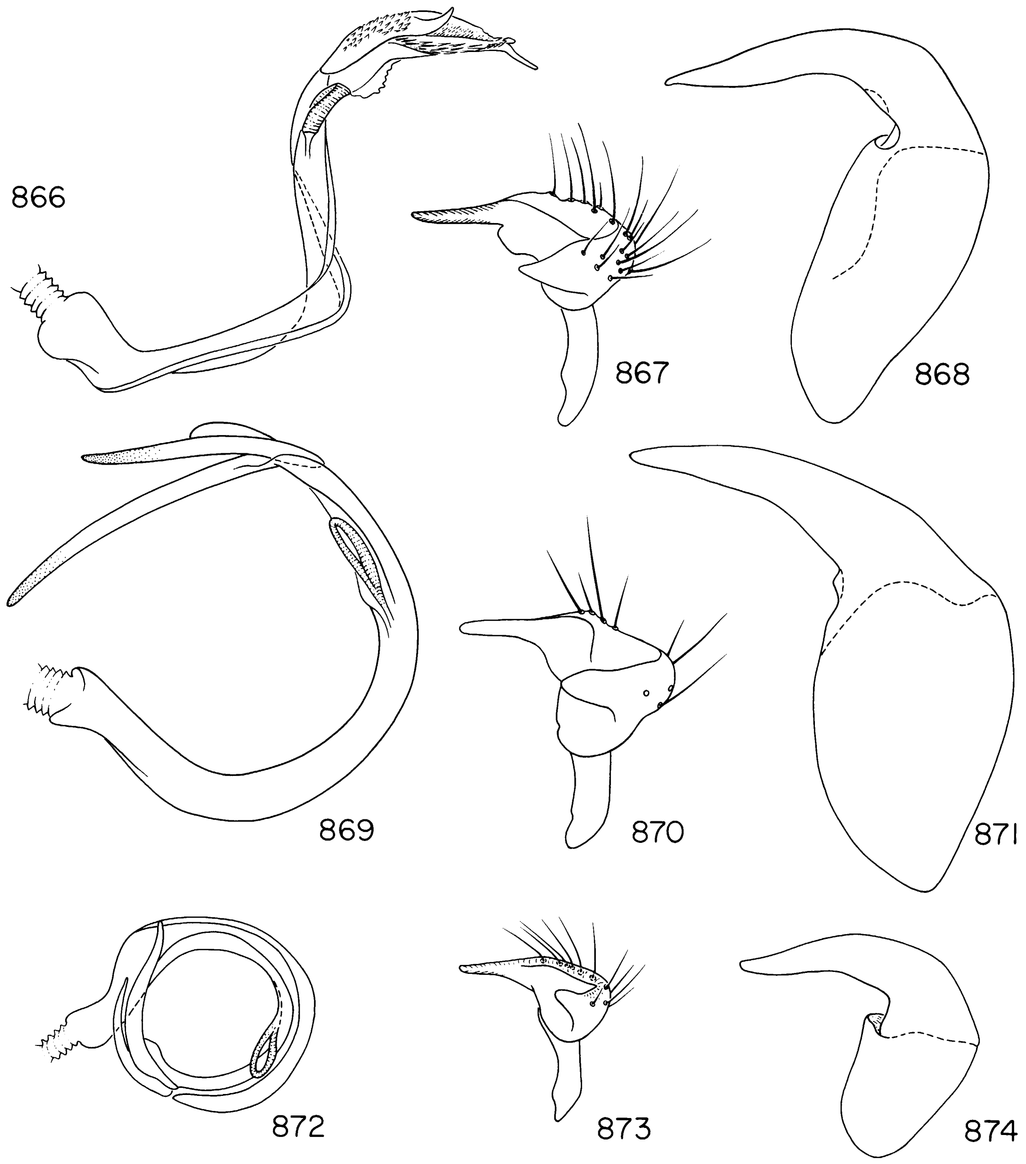
DIAGNOSIS: Keyed and diagnosed by Carvalho (1956b) as most similar to *carolinensis* among those species with a totally light antennal segment two (see discussion).

DISTRIBUTION: Bonin Islands, Chichi Jima.

DISCUSSION: This species was described from a male and two female specimens, all of which are deposited in Kyushu University, and which I have not examined. On the basis of those characters and measurements given by Carvalho, *chichijima* is the only species of the genus recorded from the Bonin Islands with a totally light second antennal segment.

Campylomma chinensis, new species
Figures 808, 863, 866–868

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two as a member of the group of species including *livida* by the presence of a thumblike process on the left side of the genital capsule and the distinctive structure of



FIGS. 866–874. *Campylomma* spp. male genitalia. 866–868. *C. chinensis.* 866. Vesica. 867. Left paramere. 868. Phallotheca. 869–871. *C. collina.* 869. Vesica. 870. Left paramere. 871. Phallotheca. 872–874. *C. cookensis.* 872. Vesica. 873. Left paramere. 874. Phallotheca.

the apex of the vesica; separated from other members of the group by the body and antennal dimensions.

DESCRIPTION: Macropterous male. Body elongate, nearly parallel-sided, length apex tylus-cuneal fracture 1.74, width pronotum 0.88; general coloration dirty yellow; antennal segment two with black basal ring; spines of antennal segment one and all femora with black bases; meso- and meta-femoral trichobothria with black bases; black spines on proximal portion of tibiae with black bases, those on distal portion without black bases; antennal segment two sometimes strongly infuscate.

Dorsal surface smooth, at most weakly

shining, covered with light, reclining common setae and some flattened, subappressed, shining setae.

Frons very weakly rounded in dorsal view; labium just surpassing apex of metacoxae; spicules on dorsal surface of metafemur black, in a neat row interrupted only on extreme distal portion of femur; genital capsule with a short, posteriorly directed, thumblike projection on left side about midway between base of capsule and insertion of left paramere; parempodia slightly enlarged, curved, nearly touching apically.

MALE GENITALIA: Figures 866–868. Vesica typical of the group of species including *livida,* anterior vesical blade sinuous with spicules on dorsal surface, posterior blade with very weakly sclerotized folds with numerous glossy spicules on anterior surface (edge).

FEMALE: Not positively identified.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in China.

DISTRIBUTION: Figure 808. China: Fukien; Hong Kong.

HOLOTYPE ♂: CHINA: *Fukien:* Yung An, February 16, 1940, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, and November 27, 1940 (AMNH, Bishop), 7♂♂.

ADDITIONAL SPECIMENS: CHINA: *Fukien:* Chungan, Bohea Hill, December 20, 1940 (Maa; Bishop), 1♂; Shacwu, Tachulan, 1000 m., October 11–13, 1943 (Maa; Bishop), 1♂. *Hong Kong:* Sai Kung Station. October 27, 1964, November 4, 1964, May 2, 1965 (Voss and Hui; AMNH, Bishop), ♂♂.

DISCUSSION: See *livida* and Notes on Additional Specimens.

Campylomma collina (Van Duzee),
new combination

Figures 812, 864, 869–871

Atractotomus collinus Van Duzee, 1934, p. 325.

DIAGNOSIS: Recognized by its dull brownish black coloration, including body and all appendages, the contrasting appressed, scalelike, sericeous pubescence of the dorsum, the weakly terete second antennal segment, and the form of the male genitalia, the vesica with both blades long, slender, nearly straight, end of unequal length.

DESCRIPTION: Macropterous male. Elongate oval, length apex tylus-cuneal fracture 1.96, width pronotum 1.08; general coloration dull brownish black, femorotibial articulation, trochanters, and antennal segments one and two narrowly distally and proximally yellow-white.

Dorsum dull, generally smooth, pronotum very weakly rugulose, entire body covered with pale or light brown reclining common setae and appressed, scalelike, sericeous pubescence.

Frons nearly straight between eyes in dorsal view, posterior margin of vertex nearly straight with a sharply rounded margin; antennal segment one as in generic description, segment two noticeably enlarged (also in female), weakly terete, of length slightly less than width of head; labium reaching to apex of mesocoxae; cuneal incisure distinct; row of spicules on metafemora nearly straight and entire; parempodia weakly enlarged and convergent apically.

MALE GENITALIA: Figures 869–871. Vesica more or less C-shaped, weakly twisted, apical spines directed at right angle to body of vesica, spines long, straight, slender and of conspicuously unequal length; phallotheca L-shaped.

FEMALE: Macropterous. Structurally similar to male, no apparent dimorphism in antennal segment two.

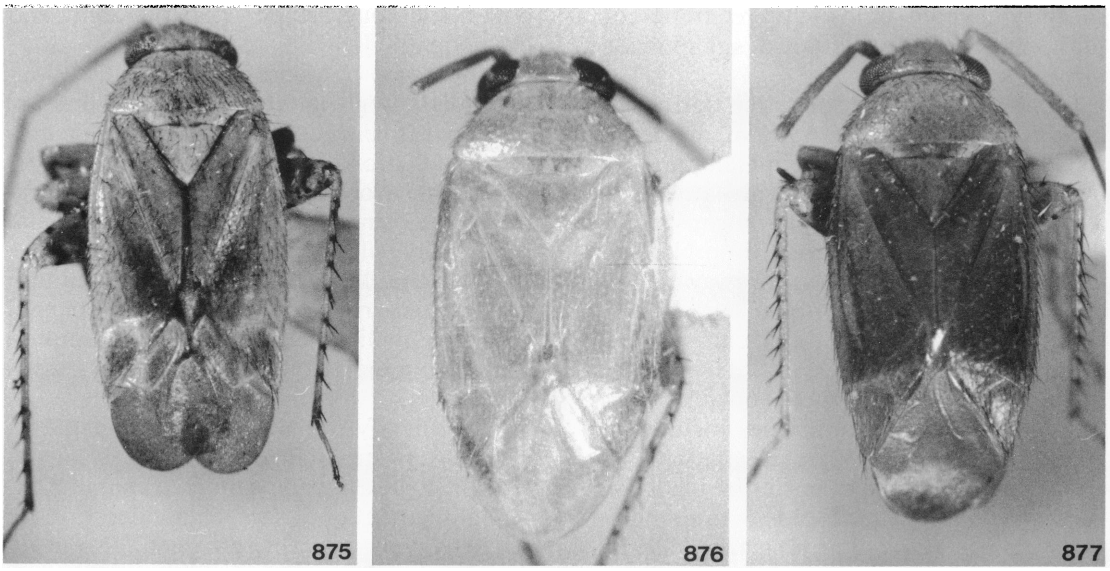
FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 812. Marquesas Islands.

SPECIMENS EXAMINED: MARQUESAS ISLANDS: *Hivaoa:* Temetiu Ridge, 3900 feet, January 14, 1932, beating *Cheirodendron* sp. (LeBronnec; Bishop), 1♀; Temetiu Summit, 4160 feet, January 20, 1932, beating *Metrosideros collina* (LeBronnec; Bishop), 3♀♀. *Uapou:* Teaviaituhai, Paaumea side, 3020 feet, November 19–20, 1931, beating *Cyrtandra* sp. and *Vaccinium* sp. (LeBronnec; Bishop), 1♂, 2♀♀; Tekohapu summit, 3000 feet, November 27, 1931, beating ferns, *Metrosideros collina* and *Weinmannia* sp. (LeBronnec; AMNH, Bishop), 1♂, 4♀♀.

DISCUSSION: Van Duzee (1934) placed his



FIGS. 875–877. *Campylomma* spp. 875. *C. cuneolata,* holotype. 876. *C. eniwetok,* ♂, paratype. 877. *C. fusca,* ♂, paratype.

species *collinus* in *Atractotomus,* apparently on the basis of its enlarged, weakly terete second antennal segment; its dark coloration may have also entered into his decision, for, as of that time most dark colored specimens were placed in genera other than *Campylomma.* The structure of the male genitalia with two apical blades on the vesica, the weakly enlarged parempodia, and the presence of a row of spicules on the dorsal surface of the metafemora all militate for placement in *Campylomma.* As noted in the "Notes on Additional Specimens" above, apparently two additional species of *Campylomma* with a terete second antennal segment occur in the eastern Pacific, in the Marquesas and Tahiti.

Campylomma cookensis, new species
Figures 812, 865, 872–874

DIAGNOSIS: Recognized by the generally brown color, dimensions, and the form of the male genitalia, especially the apical blades. Keyed as having a unicolorous light second antennal segment, although this may appear brown in some specimens.

DESCRIPTION: Macropterous male. Body form elongate elliptical, length apex tylus-cuneal fracture 1.46, width pronotum 0.81; general coloration orange-brown to brown; appendages, including antennal segment two, sometimes light and nearly yellow; meso- and meta-femoral spines and trichobothria at most with weak black bases; tibial spines black without black bases.

Dorsum smooth, at most weakly shining, usually dull; scutellum faintly transversely rugulose; entire dorsum with relatively long, reclining, dark, common setae; hemelytra with flattened, subappressed, weakly shining setae broadly placed along claval suture.

Frons weakly bulging in dorsal view, labium slightly surpassing apex of metacoxae; spicules on dorsal surface of metafemur black, in a neat, weakly undulating row; parempodia slightly enlarged, curved, nearly touching apically.

MALE GENITALIA: Figures 872–874. Vesical blades superposed, similar in shape and position to *aitutaki,* except for sclerotized base of ventral blade in *cookensis.*

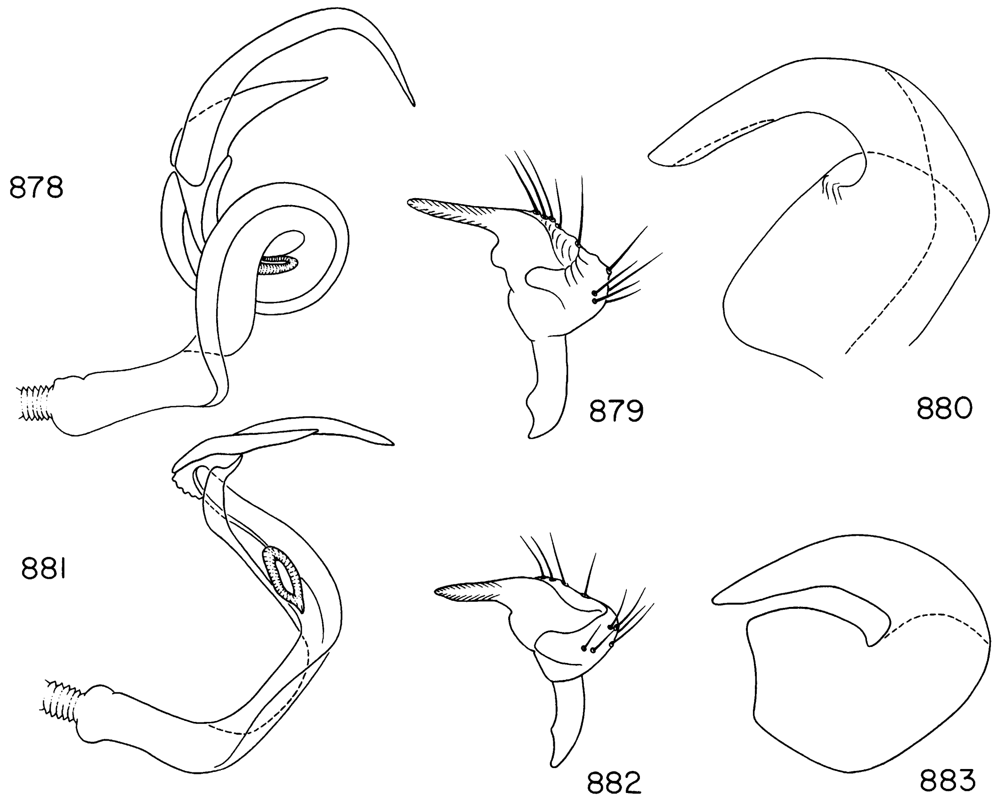
FEMALE: Macropterous. Similar to male.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in the Cook Islands.

DISTRIBUTION: Figure 812. Cook Islands

HOLOTYPE ♂: COOK ISLANDS: *Aitutaki:* Maina (Islet), September 3, 1969, K. A. J. Wise collector; deposited in the Auckland Museum, Auckland, New Zealand.



FIGS. 878–883. *Campylomma* spp. male genitalia. 878–880. *C. cuneolata*. 878. Vesica. 879. Left paramere. 880. Phallotheca. 881–883. *C. eniwetok*. 881. Vesica. 882. Left paramere. 883. Phallotheca.

PARATYPES: Same data as holotype, 1♂, 2♀♀ (Auckland, AMNH). COOK ISLANDS: *Aitutaki:* Maina Islet, October 25, 1975, sweeping (Dietz; AMNH, DSIR), 3♂♂. *Manuae:* May 13, 1965 (Ramsey; AMNH, DSIR), 11♂♂, 10♀♀.

Campylomma cuneolata Knight
Figures 812, 875, 878–880

Campylomma cuneolata Knight, 1938b, p. 186.

DIAGNOSIS: Among those species with a unicolorous light second antennal segment recognized by its relatively large size and the distinctive form of the vesical blades.

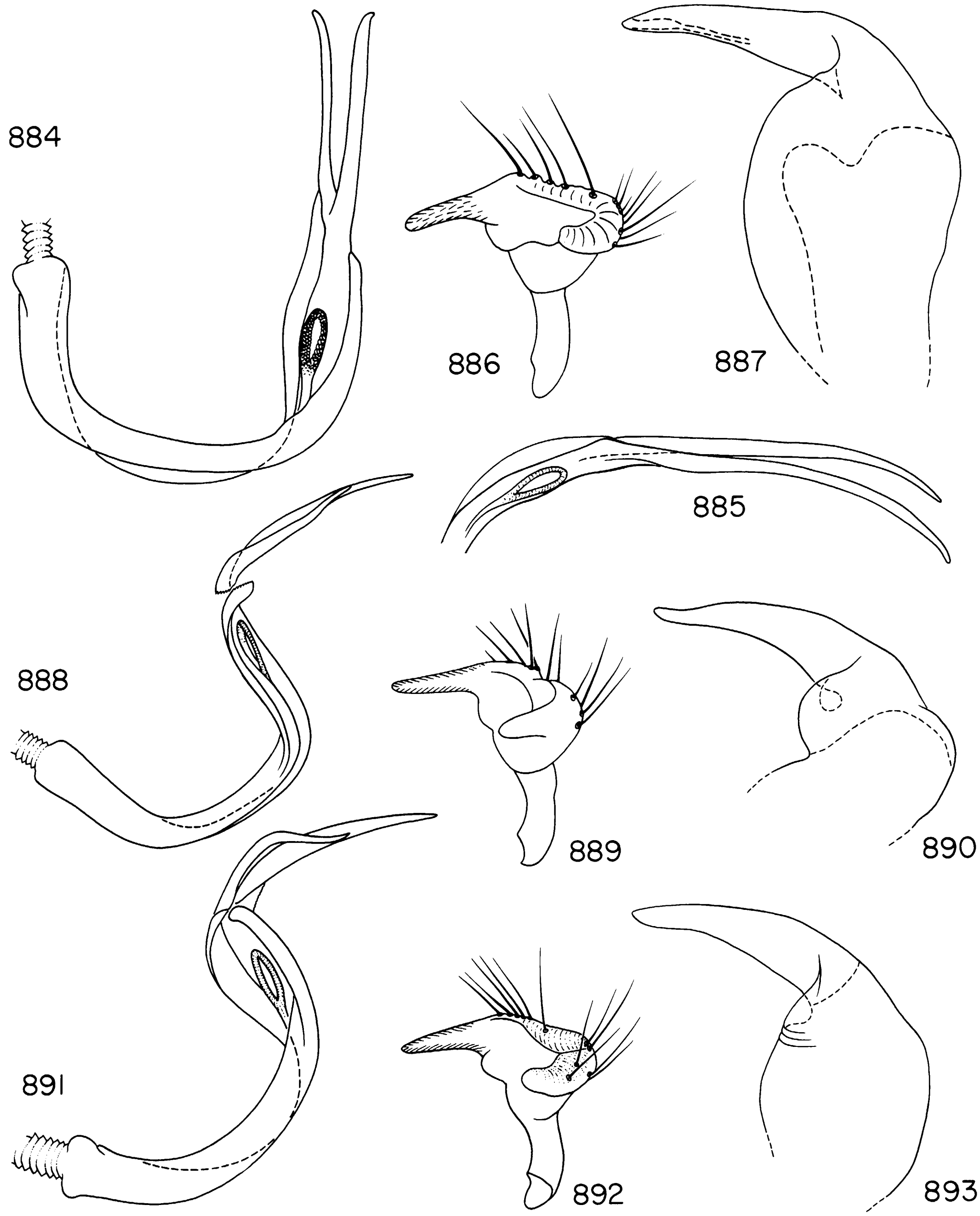
DESCRIPTION: Macropterous male. Body elongate elliptical, length apex tylus-cuneal fracture 1.90, width pronotum 0.93; general coloration including appendages dirty yellow-orange; cuneus infuscate and rather darker than remainder of dorsum; antennal segments three and four dark brown; most spines of all femora and tibiae with dark brown bases; metafemora with rather heavy dark brown spotting on distal one-half.

Body surface generally smooth, dull, pronotum weakly shining; dorsum covered with black, reclining, common setae, and some appressed, flattened dull setae.

Frons distinctly bulging in dorsal view; labium short, just surpassing base of mesocoxae; spicules on dorsal surface of metafemur black, in a somewhat irregular row interrupted distally on femur; parempodia enlarged, curved, and conspicuously flattened apically (as in *Ellenia obscuricornis*).

MALE GENITALIA: Figures 878–880. Vesica forming a single coil, anterior vesical blade very long, with a right angle bend apically, posterior blade very broad basally, more or less triangular, pointed apically.

FEMALE: Not positively identified.



FIGS. 884–893. *Campylomma* spp. male genitalia. 884–887. *C. fusca*. 884. Vesica. 885. Lateral view of apical vesical spines. 886. Left paramere. 887. Phallotheca. 888–890. *Campylomma* sp. near *fusca*. 888. Vesica. 889. Left paramere. 890. Phallotheca. 891–893. *Campylomma* sp. near *fusca*. 891. Vesica. 892. Left paramere. 893. Phallotheca.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 812. Marquesas Islands: Uapou.

SPECIMENS EXAMINED: MARQUESAS ISLANDS: *Uapou:* Tekohepu Summit, November 28, 1931, 3000 feet (LeBronnec;

Bishop), 1♂ (holotype); Teavavanui, 3200 feet, November 28, 1931, beating on *Angiopteris* sp. (LeBronnec; Bishop), 1♂; Teavaituhai, Paaumea Valley, November 20, 1931, 3020 feet, November 28, 1931, beating on *Bidens lantanoides* (LeBronnec; Bishop), 1♂.

Campylomma eniwetok, new species

Figures 812, 876, 881–883

Diagnosis: Among those species with a unicolorous light second antennal segment and generally light body, recognized by its dimensions and the form of the vesical blades.

Description: Macropterous male. Body elliptical, length apex tylus-cuneal fracture 1.70, width pronotum 0.92; general coloration yellow-white or dirty yellow-white; femora and tibial spines and trichobothria with black bases.

Dorsum smooth, weakly shining; hemelytra subhyaline; dorsum covered with light, reclining common setae.

Head transverse, frons weakly rounded; labium reaching to apex of metacoxae; abdomen broadly joined to thorax; spicules on dorsal surface of metafemur black, in a complete but somewhat irregular row; parempodia slightly enlarged, straight, sharply bent and convergent at apices.

Male Genitalia: Figures 881–883. Vesical blades elongate, relatively slender, undulating, of unequal length; phallotheca C-shaped.

Female: Macropterous. Similar to male.

Measurements: See Appendix.

Etymology: Named for Eniwetok Atoll; a noun in apposition.

Distribution: Figure 812. Marshall Islands: Eniwetok Atoll.

Holotype ♂: MARSHALL ISLANDS: *Eniwetok Atoll:* Japtan Island, February 2, 1957, L. O. Tuthill collector; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype (AMNH, Bishop), 41♂♂, 28♀♀.

Campylomma fusca Knight

Figures 812, 877, 884–893

Campylomma fusca Knight, 1938b, p. 188.

Diagnosis: Recognized among those species with a unicolorous light antennal segment two by the generally dirty yellow coloration with strongly infuscate, dull corium and clavus; long, slender, nearly equal length vesical blades distinctive.

Description: Macropterous male. Body form elongate elliptical, length apex tylus-cuneal fracture 2.08, width pronotum 1.04; general coloration dirty yellow; corium and clavus and sometimes scutellum weakly to heavily infuscate; antennal segments three and four dark brown; femora with numerous brown spots; black spines on tibiae with very limited dark bases.

Dorsum smooth, dull, covered with relatively long, reclining, dark simple setae.

Frons somewhat bulging between eyes in dorsal view; labium just surpassing apex of metacoxae; spicules on dorsal surface of metafemur black, in a neat uninterrupted row; parempodia enlarged, curved, distinctly flattened and convergent apically.

Male Genitalia: Figures 884–893. Apical vesical blades very long, slender, gently curving apically.

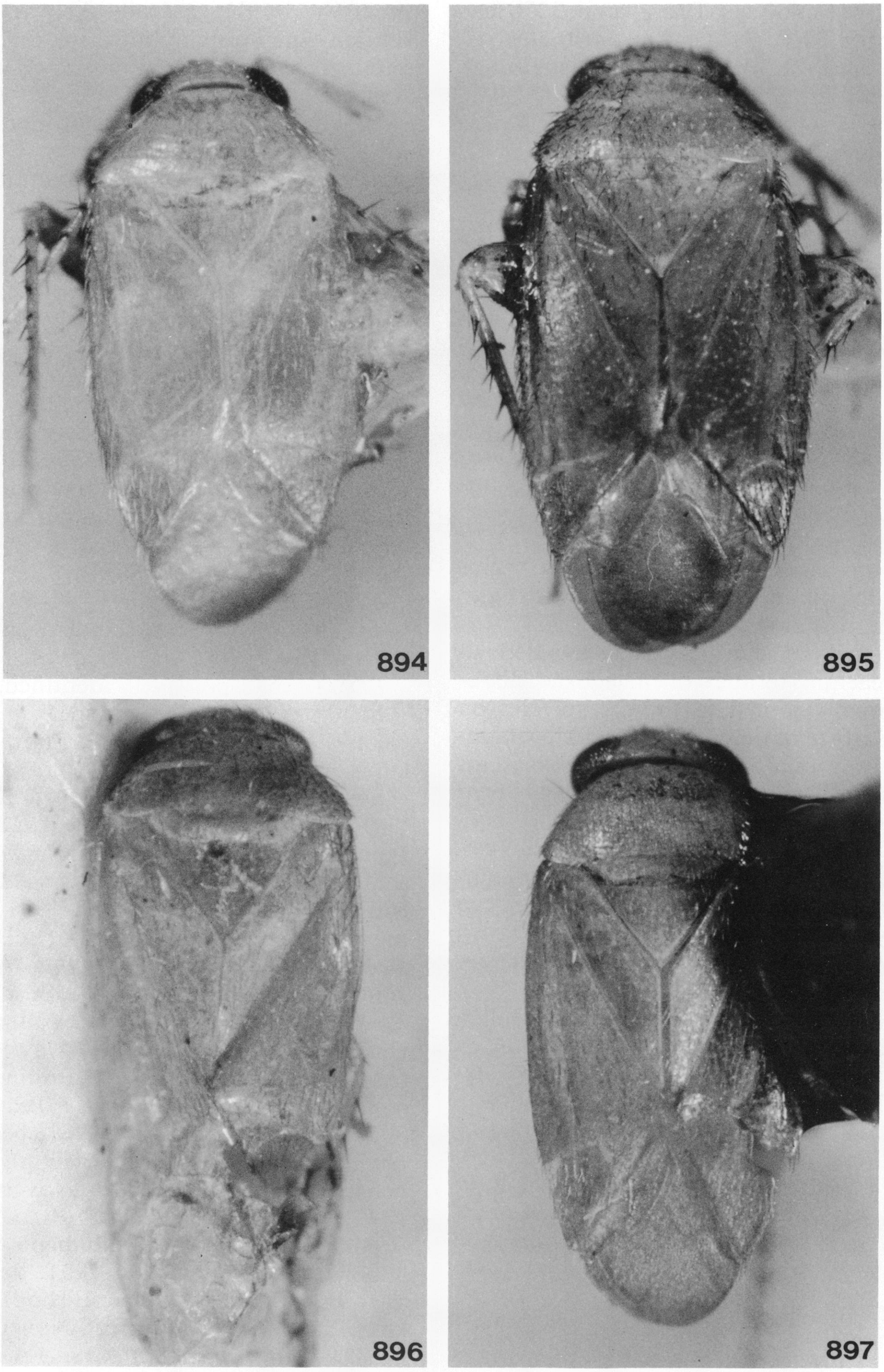
Female: Not positively identified.

Measurements: See Appendix.

Distribution: Figure 812. Marquesas Islands.

Specimens Examined: MARQUESAS ISLANDS: *Hivaoa:* Kaava Ridge, 2800 feet, January 7, 1932, beating on *Reynoldia* sp. (LeBronnec; AMNH, Bishop), 4♂♂; Kaava Ridge, 2800 feet, October 27, 1931, beating on *Ageratum conyzoides* (LeBronnec; AMNH, Bishop), 1♂. *Tahuata:* Ametaea, 2600 feet, June 28, 1930 (LeBronnec and Taura; Bishop), 1♂. *Uapou:* Vailhakaatiki, Hakahetau Valley, 3020 feet, May 18, 1931, beating on *Vaccinium* sp. (LeBronnec; Bishop), 3♂♂ (including holotype); Teavaituhai, 3020 feet, November 20, 1931, beating on *Cyrtandra* sp. (LeBronnec; Bishop), 2♂♂; Tekohepu Summit, 3200 feet, November 28, 1931, beating on *Metrosideros collina* (LeBronnec; Bishop), 1♂; Tekonhepu Summit, 3200 feet, November 28, 1931, beating on *Cyrtandra* sp. (LeBronnec; Bishop), 1♂; Tekonhepu Summit, 3200 feet, November 27, 1931, beating on *Sclerotheca* sp. (LeBronnec; Bishop), 1♂.

Discussion: Two specimens from the Marquesas Islands (Bishop) identified as *fusca* by Knight apparently represent an undescribed



FIGS. 894–897. *Campylomma* spp. 894. *C. guadalcanalica,* ♂, paratype. 895. *C. hivaoae,* holotype. 896. *C. irianica,* holotype. 897. *C. kororensis,* ♂, Palau Islands, Koror.

species. The locality data are as follows: Hivaoa, Feani Ridge, Tenatineaei, 3790 feet, January 13, 1932; Uapou, Teavaihuhai, 3000 feet, December 8, 1929, on *Sclerotheca* sp.

Campylomma guadalcanalica, new species

Figures 809, 894, 898–900

DIAGNOSIS: Recognized among those species with a unicolorous light second antennal segment by its small size, a general aspect very similar to that of *Decomioides* species, and the form of the vesical blades.

DESCRIPTION: Macropterous male. Small, body elongate elliptical, length apex tylus-cuneal fracture 1.34, width pronotum 0.76; general coloration dirty yellow-white; brown spots at bases of femoral spines and trichobothria and elsewhere; tibial spines black with very limited dark bases.

Dorsum smooth, dull, covered with reclining, light, common setae.

Head in dorsal view more or less semicircular in outline, with frons and eyes forming a smooth curve (as in *Decomioides*); labium reaching apex of metacoxae; spicules on dorsal surface of metafemur black, in a continuous uneven row; parempodia very slightly enlarged, nearly straight, bent, and convergent apically.

MALE GENITALIA: Figures 898–900. Vesical blades of distinctly unequal length and width; phallotheca L-shaped, elongate, and more or less parallel-sided distally.

FEMALE: Macropterous. Similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Guadalcanal Island, Solomon Islands.

DISTRIBUTION: Figure 809. Solomon Islands, Guadalcanal.

HOLOTYPE ♂: SOLOMON ISLANDS: *Guadalcanal:* Lane near Mt. Tatuve, 300 m., May 18, 1960, light trap, C. W. O'Brien collector; deposited in the B. P. Bishop, Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 4♂♂, 4♀♀.

DISCUSSION: The small size and the shape of the head give *guadalcanalica* a superficial appearance very much like some *Decomioides* species. The spicules on the dorsal surface of the metafemora as well as the femoral spots and vesical structure confirm its placement in *Campylomma,* however.

Campylomma hivaoae Knight

Figures 812, 895, 901–903

Campylomma hivaoae Knight, 1938b, p. 187.

DIAGNOSIS: Recognized among those species with a unicolorous light second antennal segment, by its relatively large size, the dimension of antennal segment two, reddish hemelytra, and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body elongate elliptical, length apex tylus-cuneal fracture 1.96, width pronotum 1.06; general coloration yellow-orange, hemelytra often strongly roseate; antennal segments three and four nearly black; pro- and meso-femoral spines and black tibial spines with small black bases; metafemora distally with heavy brown spotting.

Dorsum very smooth, dull, covered with long, black, reclining common setae, and some appressed, slightly flattened, light setae on clavus and corium.

Frons weakly rounded in dorsal view; labium just reaching apex of metacoxae; spicules on dorsal surface of metafemur black, in a generally neat row; parempodia somewhat enlarged, curved, flattened and convergent apically.

MALE GENITALIA: Figures 901–903. Vesical blades relatively broad, smoothly and weakly curved, the anterior much shorter than the posterior.

FEMALE: Macropterous. Similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 812. Marquesas Islands: Hivaoa.

SPECIMENS EXAMINED: MARQUESAS ISLANDS: *Hivaoa:* Kaava Ridge, Kakapuanui, 2800 feet, October 27, 1931, on *Glochidium ramiflorus* (Le Bronnec; Bishop), 2♂♂ (including holotype); Kaava Ridge, 2800 feet, January 7, 1932, on *Weinmannia* sp. (LeBronnec; Bishop), 1♂.

Campylomma irianica, new species

Figures 809, 896, 904–906

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two by the orangish coloration and especially the structure of the apex of the vesica with the saw tooth edges of the less heavily sclerotized areas.

DESCRIPTION: Macropterous male. Body shape elongate, more or less parallel-sided; length apex tylus-cuneal fracture 1.51, width pronotum 0.80; general coloration yellow-orange; antennal segment one with heavy black spots at bases of spines, segment two with black basal ring; mesofemoral trichobothria with light brown spots at bases; metafemoral spines and trichobothria with brown bases; black tibial spines without black bases.

Dorsum covered with reclining, dark, common setae and clavus and corium with subappressed, flattened, pale setae.

Frons weakly bulging in dorsal view; labium not quite reaching apex of metacoxae; spicules on dorsal surface of metafemur black, in a neat uninterrupted row; parempodia not observable in available specimens.

MALE GENITALIA: Figures 904–906. Apical vesica blades slender, of irregular shape and unequal length, with less heavily sclerotized enveloping folds with serrate edges.

FEMALES: Not positively identified.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in West Irian.

DISTRIBUTION: Figure 809. Western New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Cyclops Mountains, Sabron, Camp 2, 2000 feet, July 1936, L. E. Cheesman collector; deposited in the British Museum (Nat. Hist.).

PARATYPES: INDONESIA: *West Irian:* Kutsime, W of Swart Val., 1500 m., November 14, 1958, light trap (Gressitt; Bishop), 1♂. PAPUA NEW GUINEA: *Milne Bay Prov.:* Normandy Island, Walkaiuna, 0–50 m., April 10–25, 1956 (Brass; AMNH), 2♂♂.

Campyloma kororensis Carvalho

Figures 812, 897, 907–910

Campylomma kororensis Carvalho, 1956b, p. 37.

DIAGNOSIS: Recognized among those species with a totally black second antennal segment by the almost white coloration and the form of the vesical blades; similar in appearance to *aitutaki.*

DESCRIPTION: Macropterous male. Body form elongate elliptical, length apex tylus-cuneal fracture 1.53, width pronotum 0.83; basic coloration dirty white to slightly yellowish; antennal segment one with spines with black bases, segment two entirely black; all femora with spines with black bases, segment two entirely black; meso- and meta-femoral trichobothria with black bases; black tibial spines usually without black bases.

Dorsum smooth, very weakly shining, covered with reclining, white, common setae.

Frons not protruding anteriorly in dorsal view; labium not quite attaining apex of mesocoxae; spicules on dorsal surface of metafemur black, in a neat row; parempodia setiform, very slightly curved, bent and convergent apically.

MALE GENITALIA: Figures 907–910. Vesica apparently with only a single blade (only one specimen dissected), this relatively short and gently curved.

FEMALE: Macropterous. Similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 812. Palau Islands: Koror.

SPECIMENS EXAMINED: PALAU ISLANDS: *Koror Island:* March 23, 1953 (Beardsley; USNM), 1♂ (holotype, 1♀ (allotype); March 23, 1953 (Beardsley; USNM), 1♂ (holotype), 1♀ (allotype); March 15, 1953, at light (Beardsley; Bishop), 1♂ (labeled as paratype but not listed in Carvalho, 1956b).

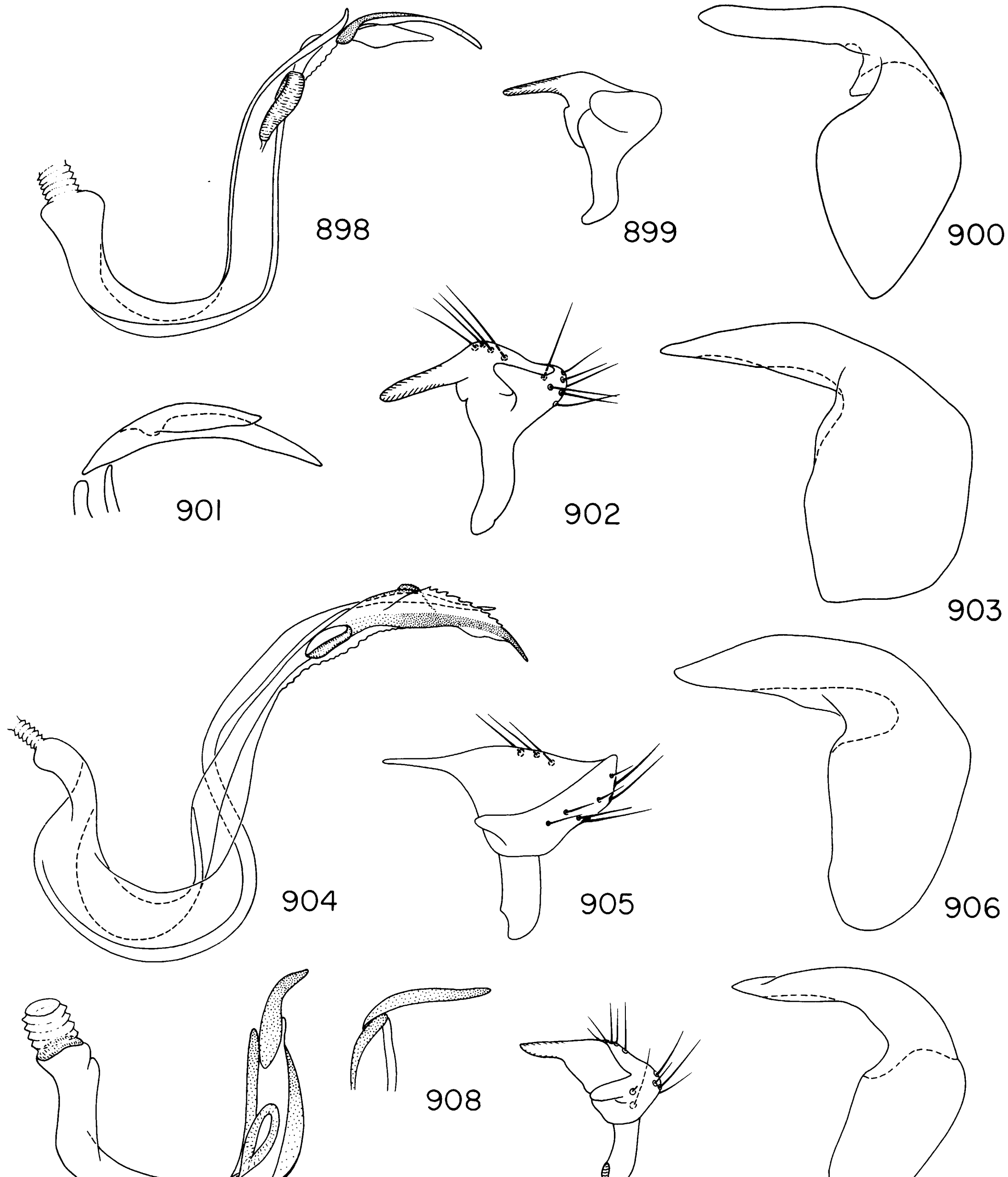
Campylomma kraussi, new species

Figures 812, 911, 914–917

DIAGNOSIS: Recognized among those species with a unicolorous light antennal segment two by its relatively large size, light coloration, and the distinctive form of the vesical blades.

DESCRIPTION: Macropterous male. Body shape elongate elliptical, length apex tylus-cuneal fracture 2.03, width pronotum 1.05; basic coloration dull orange; femoral spines and trichobothria with black bases; metafemora with additional brown spotting; tibial spines at most with limited black bases.

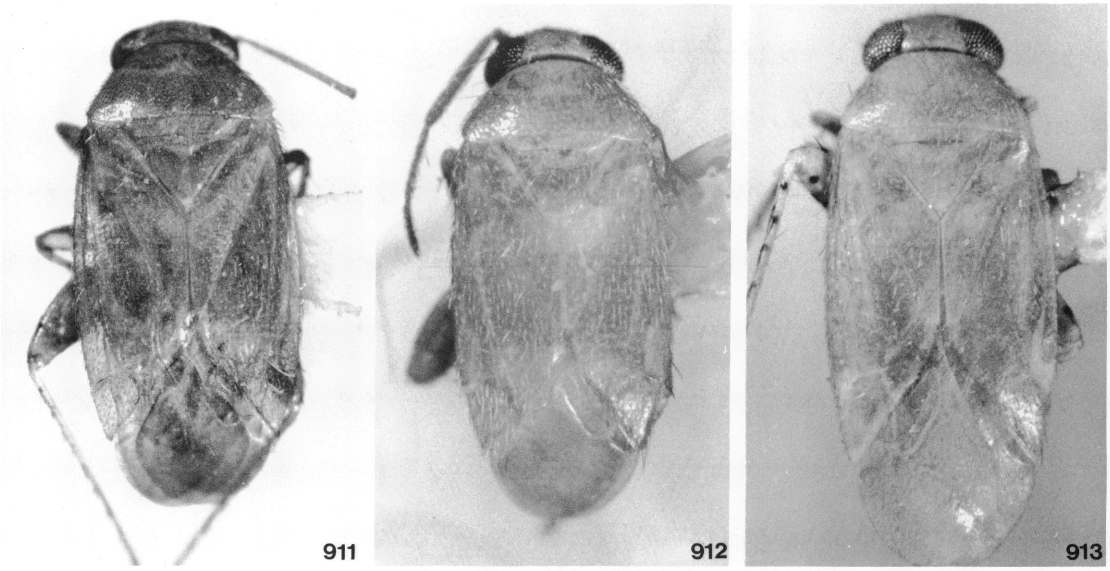
Dorsum smooth, shining, covered with re-



FIGS. 898–910. *Campylomma* spp. male genitalia. 898–900. *C. guadalcanalica*. 898. Vesica. 899. Left paramere. 900. Phallotheca. 901–903. *C. hivaoae*. 901. Apex of vesica. 902. Left paramere. 903. Phallotheca. 904–906. *C. irianica*. 904. Vesica. 905. Left paramere. 906. Phallotheca. 907–910. *C. kororensis*. 907. Vesica. 908. Apex of vesica. 909. Left paramere. 910. Phallotheca.

clining common setae similar in coloration to body surface and some black setae on posterior margin of vertex and near anterior margin of pronotum.

Frons weakly convex in dorsal view; labium not quite attaining apex of metacoxae; spicules on dorsal surface of metafemur black, in a somewhat irregular row; parempodia



FIGS. 911–913. *Campylomma* spp. 911. *C. kraussi,* holotype. 912. *C. leyteana,* holotype. 913. *C. livida,* ♂, India, New Delhi.

slightly enlarged, weakly curved, bent and convergent apically.

MALE GENITALIA: Figures 914–917. Vesica large relative to size of body, apical blades somewhat attenuated, undulating, subequal in length.

FEMALE: Macropterous. Similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for N. L. H. Krauss.

DISTRIBUTION: Figure 812. Society Islands: Tahiti.

HOLOTYPE ♂: SOCIETY ISLANDS: *Tahiti:* Fare Rau, Apa, March 1959, N. L. H. Krauss; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 1♂, 1♀. SOCIETY ISLANDS: *Tahiti:* Papeete, February 25–27, 1924 (Clemens; Bishop), 1♂, 1♀; Mt. Aorai, NW ridge, 600 m., July 8, 1961, ex *Dodonea* (Gressitt; Bishop), 1♀.

DISCUSSION: Although strikingly different in dimensions, *kraussi* is apparently most closely related to *tahitica,* based on the similarity in the structure of the male genitalia.

Campylomma leyteana, new species

Figures 808, 912, 918–920

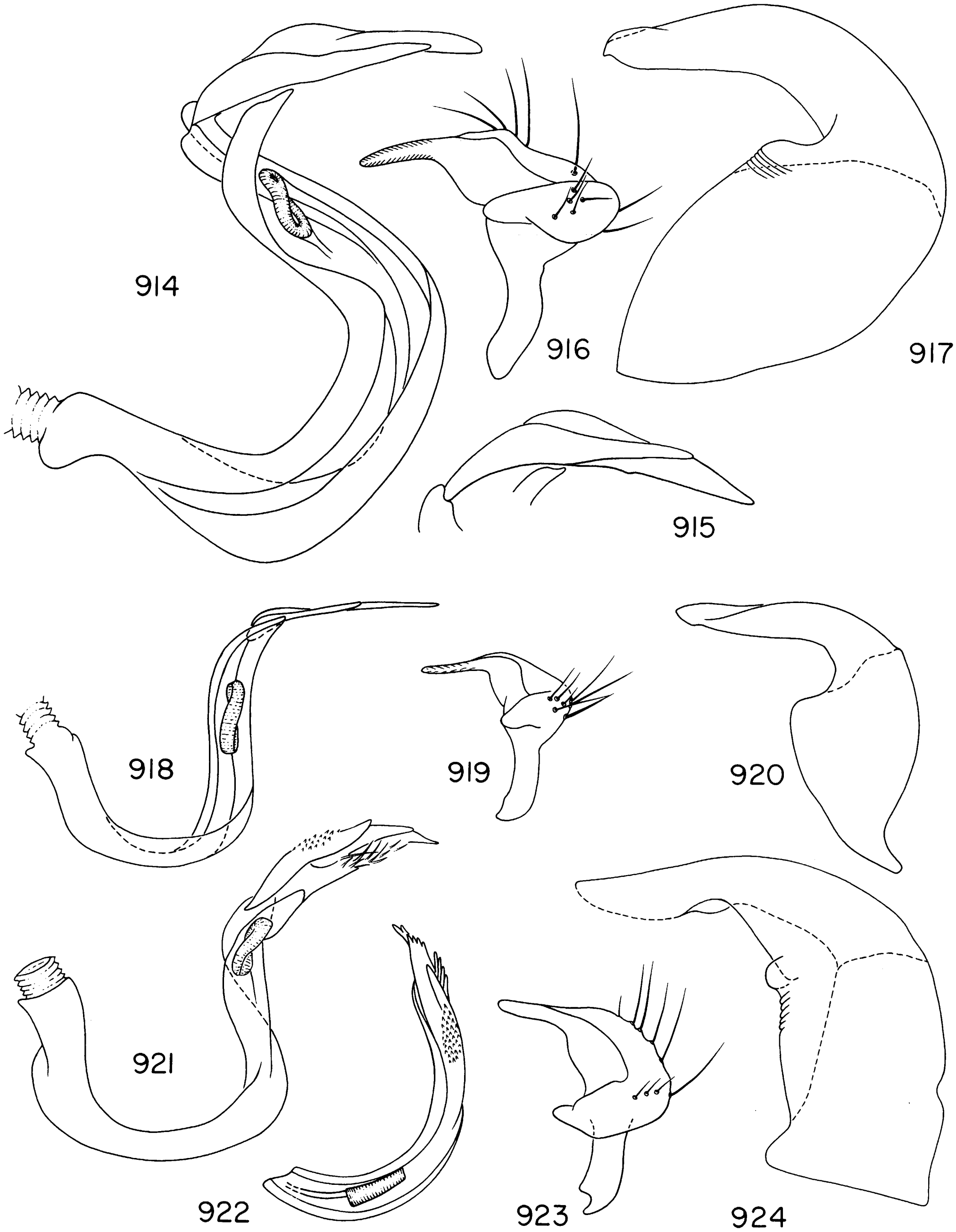
DIAGNOSIS: Recognized among those species with a unicolorous light second antennal segment by its very small size, somewhat orangish coloration, and the form of the vesical blades; similar in size and appearance to *guadalcanalica.*

DESCRIPTION: Macropterous male. Body form elongate elliptical, length apex tylus-cuneal fracture 1.34, width pronotum 0.74; basic coloration light yellow orange; meso- and meta-femoral trichobothria with brown bases; metatibial spines with black bases; all tibiae with black spines.

Dorsum smooth, very weakly shining, covered with moderately long, reclining, golden setae.

Frons and anterior surface of eyes forming a smooth curve in dorsal view; spicules on dorsal surface of metafemur forming a neat row; parempodia setiform, nearly straight, bent, and convergent apically.

MALE GENITALIA: Figures 918–920. Apical vesical blades elongate, needle-like, of unequal length.



FIGS. 914–924. *Campylomma* spp. male genitalia. 914–917. *C. kraussi*. 914. Vesica. 915. Apex of vesica. 916. Left paramere. 917. Phallotheca. 918–920. *C. leyteana*. 918. Vesica. 919. Left paramere. 920. Phallotheca. 921–924. *C. livida*. 921. Vesica. 922. Obverse view of apex of vesica. 923. Left paramere. 924. Phallotheca.

FEMALE: Not identified.
MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the island of Leyte, Philippine Islands.

DISTRIBUTION: Figure 808. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Leyte:* Abuyog, 35 miles S of Tacloban, July 9–12, 1961, Philippine National Museum and American Museum of Natural History Expedition; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype (AMNH), 1♂. PHILIPPINE ISLANDS: *Mindanao:* Cotabato, Milbuk, August 9–10, 1958, light trap (Milliron; Bishop), 1♂.

Campylomma livida Reuter

Figures 808, 913, 921–924

Campylomma livida Reuter, 1884, p. 199.
Ragmus morosus Ballard, 1921, p. 509. NEW SYNONYMY.

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two by the presence of a thumblike projection on the left side of the genital capsule and the dimensions of the body and antennae.

DESCRIPTION (based on examination of type specimen and USNM specimens from India): Macropterous male. Body form elliptical, length apex tylus-cuneal fracture 1.61, width pronotum 0.81; general coloration dirty yellowish orange; most of antennal segment one and extreme base of segment two black; femora with black spots at bases of spines and trichobothria; tibiae with black spines with small black bases.

Dorsum smooth, dull, covered with reclining, light, common setae.

Frons weakly rounded in dorsal view; labium reaching apex of metacoxae; spicules on dorsal surface of metafemur black; in a nest uninterrupted row; genital capsule with a posteriorly directed thumblike process on left side about midway between base of capsule and insertion of left paramere; parempodia not observable in available specimens.

MALE GENITALIA: Figures 921–924. Vesica very similar to other members of *livida*-group with relatively stout sinuous anterior apical blade with a few spicules dorsally and glassy spicules associated with lightly sclerotized elaboration of posterior blade. (The vesica of the holotype male is drawn in the obverse of that of the specimen from New Delhi.)

FEMALE: Macropterous. Similar to male.

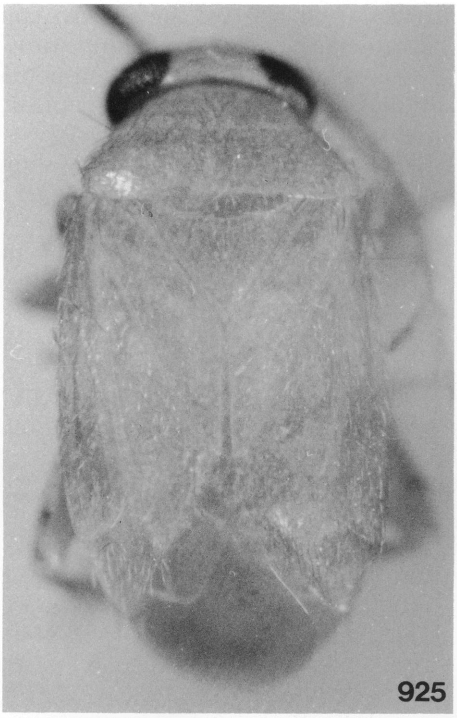
MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 808. India, Sri Lanka, and the Philippine Islands. Also recorded in the literature from Australia, Java, Taiwan, and Samoa, none of which identifications I can confirm.

SPECIMENS EXAMINED: INDIA: Delhi, October 15, 1961, at light (Oman; USNM), 3♂♂; New Delhi, October 13, 1967, November 1, 1967, light trap (Gibson; USNM), 3♂♂. PHILIPPINE ISLANDS: *Mindoro:* San Jose, April 5, 1945 (Ross; CAS), 2♂♂. SRI LANKA: *Eastern Prov.:* Kuchchaveli, 20 mi. NW of Trincomalee, February 9–10, 1962, swept on prickly Euphoriaceae on the shore (Brinck, Andersson, Cederholm; Lund), 1♂. *Northern Prov.:* Tharakunda, 4 mi. NW of Manner, February 15, 1962, ex *Acacia* (Brinck, Andersson, Cederholm; Lund), 1♂. *North Central Prov.:* Kahatagasdigliya, 20 mi. ENE Anuradhapura, February 10, 1962, swept on grassland (Brinck, Andersson, Cederholm; Lund), 1♂. *Sabarangamuwa Prov.:* Kitugala, 21 mi. N of Ratnapura, March 17, 1962, at light (Brinck, Andersson, Cederholm; Lund), 1♂. *Prov. of Uva:* Kudu Cya, river 15 mi. S of Wellawaya, March 22, 1962, dry roadside (Brinck, Andersson, Cederholm; Lund), 1♂; Wellawaya, 18 mi. S of Badulla, March 21, 1962 (Brinck, Andersson, Cederholm; Lund), 1♂. *Western Prov.:* stream 10 mi. NNE of Colombo, January 11, 1962, on tree (Brinck, Andersson, Cederholm; Lund), 1♂.

DISCUSSION: Specimens assigned to this species are the smaller of members of a group all of which have spicules apically on the vesica and which have the thumblike process on the left side of the genital capsule. More than one species may be represented, but at the moment it seems advisable to treat this as one widely distributed taxon because available material is somewhat fragmentary and I was able to find no satisfactory way to recognize any further subdivisions.

Although I have examined Reuter's type (Zoological Museum, Copenhagen)—which is very similar in appearance to the specimens from New Delhi, I have not seen the specimens from Australia, Taiwan, Java, and Samoa on which the other published distributional records are based. I have reason to doubt the validity of those records, since no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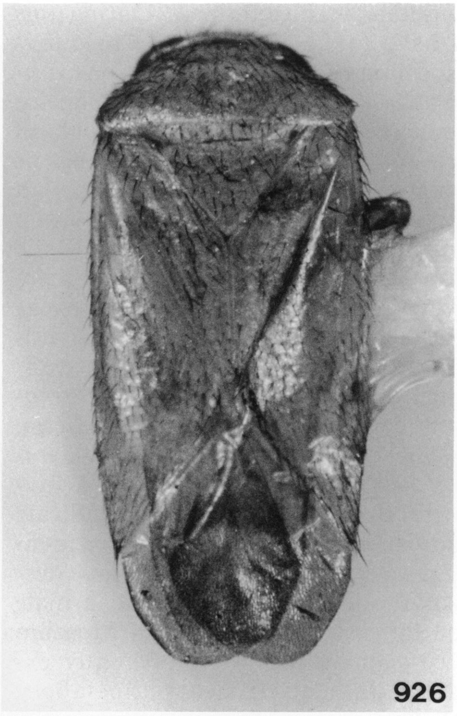
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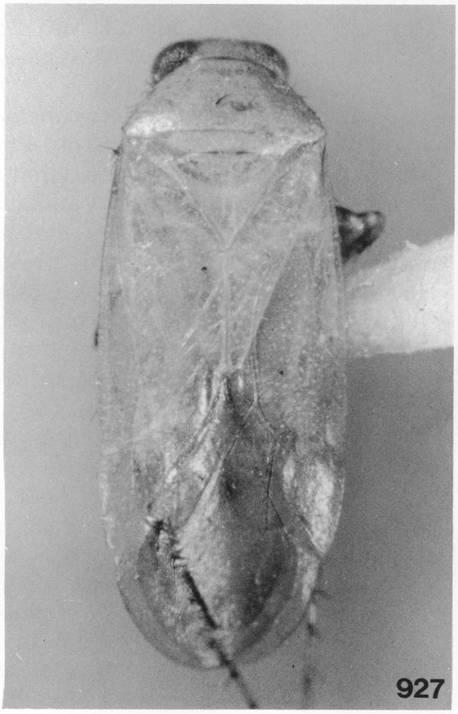
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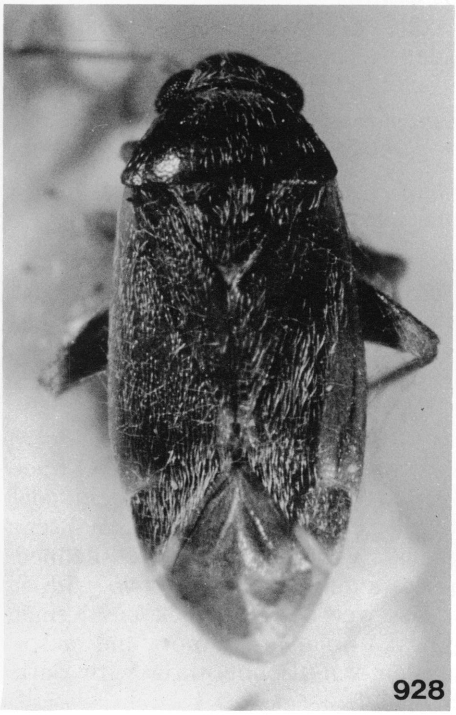
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FIGS. 925–928. *Campylomma* spp. 925. *C. lividicornis*, ♂, Philippine Islands, Negros Island, Dumaguete. 926. *C. longirostris*, holotype. 927. *C. luzonica*, holotype. 928. *C. malaysiana*, ♂, paratype, Malaya, Kuala Lumpur.

male genitalia were examined. During this study, I have found it impossible to differentiate specimens of several species of *Campylomma* based on superficial appearance or measurements. This is true for members of the species group to which *livida* belongs as well as between that group and species with remarkably different vesicae. The *livida*-group can be recognized by the presence of the thumblike process on the genital capsule; there are, however, specimens with similar vesicae (see additional specimens from Niue Islands [DSIR]) which lack the thumblike process.

Examination of specimens of *Ragmus morosus* Ballard (1921) from Coimbatore, India, indicates that they are conspecific with *Campylomma livida* Reuter, the latter name having priority. Because Ballard did not indicate how many specimens he examined or identify a single specimen as the type, I have designated as the lectotype of *morosus* a male specimen deposited in the British Museum (Nat. Hist.) and which was apparently examined by Ballard. It bears the labels: "5.IV.21, Coimbatore, from c. cotton leave, Ballard coll.; Lectotype *Ragmus morosus* Ballard, det. R.T. Schuh."

Campylomma lividicornis Reuter

Figures 808, 809, 925, 929–932

Campylomma lividicornis Reuter, 1912, p. 65; Carvalho, 1956b, p. 37.

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two by its light coloration, relatively small size, and the form of the vesical blades, the anterior blade being much shorter than the posterior (figs. 929, 930).

DESCRIPTION: Macropterous male. Body elongate oval, length apex tylus-cuneal fracture 1.49, width pronotum 0.83; general coloration light yellow; spines on antennal segment one black with more or less well-defined black bases; antennal segment two with a more or less well-defined black basal ring; black spines of tibiae and femora and meso- and meta-femoral trichobothria with dark brown bases.

Dorsum smooth, weakly shining, covered with numerous, reclining, pale, common setae of somewhat shaggy appearance.

Frons nearly flat in dorsal view; labium reaching to apex of metacoxae; spicules on dorsal surface of metafemur brown, in a somewhat irregular row; parempodia slightly enlarged, curved, convergent apically.

MALE GENITALIA: Figures 929–932. Anterior apical vesical blade very short, rather slender, posterior blade much longer, straight, spinelike.

FEMALE: Macropterous. Similar to male.

FEMALE GENITALIA: Not examined.

DISTRIBUTION: Figures 808 and 809. India, Papua New Guinea, Philippine Islands.

SPECIMENS EXAMINED: INDIA: Madras, 1902 (Biro; Helsinki), 1♂, 3♀♀. PAPUA NEW GUINEA: *Central Prov.:* Port Moresby, September 21, 1955, light trap (Gressitt; Bishop), 3♂♂. *East Sepik Prov.:* Wewak, 2–20 m., October 15, 1957 (Gressitt; Bishop), 1♂; *Milne Bay Prov.:* Misima Island, Mt. Sisa, 350 m., July 27, 1956 (Brass; AMNH), 1♂. PHILIPPINE ISLANDS: *Leyte:* Abuyog, 35 mi. S of Tacloban, July 5–8, 1961 (AMNH), 1♂. *Luzon:* Mountain Prov., Liwo, 8 km. E of Mayoyao, 1000–1200 m., June 4–12, 1967 (Torrevillas, Bishop), 3♂♂. *Negros Island:* Dumaguete, Camp Lookout, May 25, 1961, February 15–April 15 and May 13–28, 1961 (Schneirla and Reyes; AMNH), 12♂♂, 14♀♀.

DISCUSSION: *Campylomma lividicornis* was originally described from Luzon, Philippine Islands. Reuter (1912) indicated that the type specimens were deposited in Vienna, but correspondence with the staff of that museum indicates that no specimens are present. The Helsinki Museum which possesses most of Reuter's types, provided me with four specimens, on a single card, collected by Biro in Madras in 1902, which were identified as *lividicornis,* apparently by Reuter.

Reuter's original description could apply to any one of a number of species of *Campylomma* and therefore is of little help in ascertaining the identity of this taxon in the absence of a type.

Carvalho (1956b) considered *Campylomma marshallensis* Usinger as a synonym of *lividicornis.* There is no indication in his work that he had access to type specimens of *lividicornis,* that he examined any Philippine material, or that he examined the male genitalia. Carvalho (1956b) also included specimens from Wake Island under *lividicornis.* The male genitalia of specimens from Madras, India (mentioned above), the Philippines (see specimens examined), Wake Island, and Likiep Atoll, Marshall Islands (Usinger paratypes), indicates that three species are involved.

The Indian and Philippine specimens have virtually identical vesicae. The Wake Island and Marshall Islands specimens, however, are different from each other and from the Philippine specimens. Since the type of *lividicornis* is not available the decision to assign the name to the specimens at hand from India, New Guinea, and the Philippines is somewhat arbitrary, but seems to resolve the greatest numbers of conflicts, at least for the moment.

Campylomma longirostris Knight
Figures 812, 926, 933, 934

Campylomma longirostris Knight, 1938b, p. 187.

DIAGNOSIS: Recognized among those species with a unicolorous light antennal segment two by the relatively large size, the relatively long labium, and by the form of the vesical blades; appearing most similar to *tinctipennis.*

DESCRIPTION: Macropterous male. Body very elongate elliptical, length apex tylus-cuneal fracture 1.93, width pronotum 1.06; general coloration dirty yellow-orange to rather heavily reddish; femora with weak or inconspicuous spots; black tibial spines without black bases.

Dorsum smooth, dull, covered with rather long, reclining, black, common setae, and nearly appressed, weakly flattened, pale setae on corium and clavus.

Frons weakly bulging in dorsal view; labium just surpassing apex of metacoxae; spicules on dorsal surface of metafemur black, in an irregular row; parempodia slightly enlarged, curved, slightly flattened, and convergent apically.

MALE GENITALIA: Figures 933 and 934. Apical vesical blades relatively short, stout, anterior sinuous, posterior smoothly curved.

FEMALE: Not positively identified.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 812. Marquesas Islands.

SPECIMENS EXAMINED: MARQUESAS ISLANDS: *Hivaoa:* Kaava Ridge, 2460 feet, January 6, 1932, at light (LeBronnec; Bishop), 1♂. *Nuku Hiva:* ridge north of Teuanui, 2800 feet, October 26, 1929, on *Metrosideros collina* (Mumford and Adamson; Bishop), 1♂ (holotype); Muake, 2500 feet, August 3, 1931, on *Metrosideros collina* (LeBronnec and Taura; Bishop), 1♂; Tapuaooa, *ca.* 2500 feet, May 30, 1931, on *Weinmannia parviflora* (LeBronnec and Taura; Bishop), 1♂.

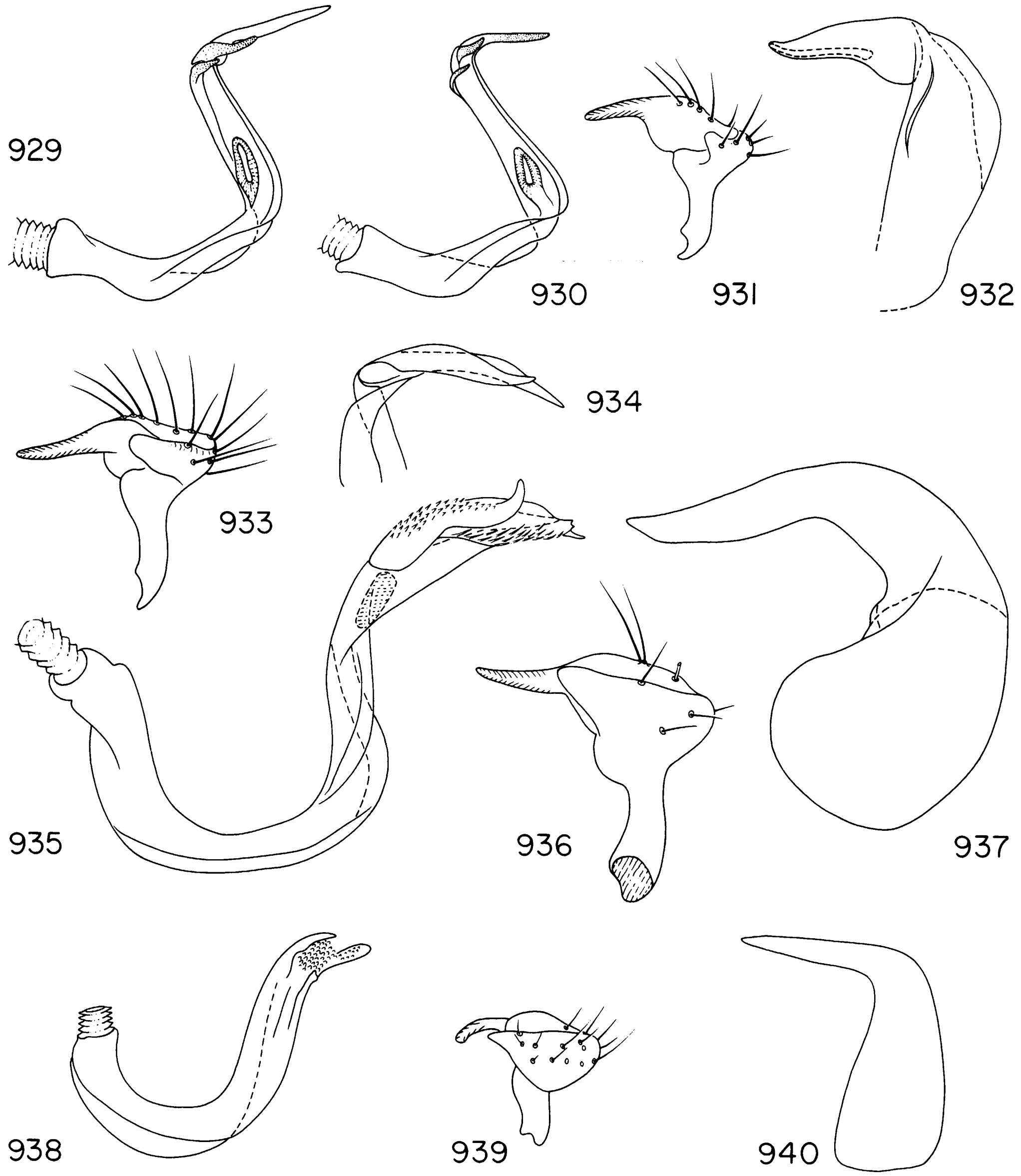
DISCUSSION: Knight (1938b) described this species from three specimens. He distinguished it from all other large species of *Campylomma* from the Marquesas Islands—i.e., all but *minuenda*—on the basis of its having the labium extending well onto the abdomen. Of the specimens Knight listed I was able to find only those labeled as holotype and allotype, the latter being his published "paratype" from Tahuna. The holotype does indeed have a long rostrum, but this may be a result of the fact that the head is strongly flexed posteroventrally so as to place the apex of the labium well onto the abdomen and give a false appearance of a long labium.

Among the other species known from the Marquesas Islands, *longirostris* is most similar to *tinctipennis,* which also has a relatively long labium. The two species have the apical blades of the vesica very similar in shape, but there are apparently constant differences. Two specimens that I have listed as *longirostris* were identified by Knight as *tinctipennis* and one as *marquesana.*

Campylomma luzonica, new species
Figures 808, 809, 927, 935–937

DIAGNOSIS: Recognized among those species with the black basal ring on antennal segment two as belonging to the group of species including *livida* by the presence of the thumblike projection on the left side of the genital capsule and the spicules on the vesical blades; distinguished from other members of that group by the body and antennal dimensions.

DESCRIPTION: Macropterous male. Body elongate, nearly parallel sided, length apex tylus-cuneal fracture 2.13, width pronotum 1.04; general coloration light dirty yellow; antennal segment two with black basal ring; spines on antennal segment one with black bases; black spines of femora and tibiae and



FIGS. 929–940. *Campylomma* spp. male genitalia. 929–932. *C. lividicornis*. 929. Vesica. 930. Vesica. 931. Left paramere. 932. Phallotheca. 933, 934. *C. longirostris*. 933. Left paramere. 934. Apex of vesica. 935–937. *C. luzonica*. 935. Vesica. 936. Left paramere. 937. Phallotheca. 938–940. *C. malaysiana*. 938. Vesica. 939. Left paramere. 940. Phallotheca.

meso- and meta-femoral trichobothria with black bases.

Dorsum smooth, weakly shining, hemelytra subhyaline, covered with moderately long, reclining, brown setae and subappressed, flattened shining setae on clavus and corium.

Frons and eyes nearly straight across in dorsal view; labium just surpassing apex of metacoxae; genital capsule with a short, posteriorly directed, thumblike process on left side about midway between base of capsule and left paramere; spicules on dorsal surface of metafemur black, in a neat row; parempodia setiform, weakly curved, convergent apically.

MALE GENITALIA: Figures 935–937. Vesica similar in form to that of other members of the *livida* group; anterior apical blade relatively short, sinuous, with many spicules on dorsal surface; glassy spicules associated with less heavily sclerotized elaborations of posterior blade.

FEMALE: Macropterous. Similar to male.

FEMALE GENITALIA: Posterior wall simple.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on Luzon, Philippine Islands.

DISTRIBUTION: Figures 808 and 809. Philippine Islands, New Guinea.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Mountain Prov., Abatan, Buguias, 60 km. S of Bontoc, 1800–2000 m., June 20, 1964, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 13♂♂, 12♀♀.

ADDITIONAL SPECIMENS: INDONESIA: *West Irian:* Kutsime W of Swart Valley, 1500 m., November 14, 1958, light trap (Gressitt; Bishop), 1♂. PAPUA NEW GUINEA: *Morobe Prov.:* Wau, 1200 m., July 23–27, 1962, light trap (Sedlacek; Bishop), 1♂. *Southern Highlands Prov.:* Mendi, 1660 m., October 6, 1958, light trap (Gressitt; Bishop), 1♂. *West Sepik Prov.:* Telefomin, 1550 m., August 13, 1963, light trap (Straatman; Bishop), 1♂.

Campylomma malaysiana, new species
Figures 808, 928, 938–940

DIAGNOSIS: Recognized by the generally dark brown coloration, the woolly, golden, recumbent pubescence of the dorsum, and the form of the male genitalia, the vesica having a single paddle-shaped apical process.

DESCRIPTION: Macropterous male. Body elongate oval, length apex tylus-cuneal fracture 1.50, width pronotum 0.84; generally dark brown, including distal two-thirds of metafemora; exocorium tending toward golden, tinged with red posteriorly; membrane brown, somewhat mottled; antennal segments one and two, legs, including coxae, except as noted above for metafemora, and labium light brown to golden; antennal segments three and four dark.

Dorsum generally smooth, dull to weakly shining, pronotum very weakly rugulose; dorsum thinly covered with woolly, golden, recumbent pubescence; abdomen ventrally densely covered with golden, reclining common setae.

Frons weakly rounded between eyes, tylus not visible in dorsal view; posterior margin of vertex nearly straight between eyes, evenly and sharply rounded; antennal segment one as in generic description, segment two cylindrical, diameter slightly less than that of segment one, length somewhat greater than width of head; labium reaching to apex of mesocoxae; cuneal incisure shallow but distinct; row of spicules on dorsal surface of metafemur erratic, incomplete; parempodia setiform, weakly curved, strongly bent and convergent apically.

MALE GENITALIA: Figures 938–940. Vesica weakly S-shaped, twisted, secondary gonopore nearly apical, apparently not of usual O-shape, single paddle-shaped apical projection; phallotheca L-shaped, tapered and attenuated apically.

FEMALE: Macropterous. Similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Malaysia.

DISTRIBUTION: Figure 808. Malaya and Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sarawak:* Bau District, Bidi, 90–240 m., September 2, 1958, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

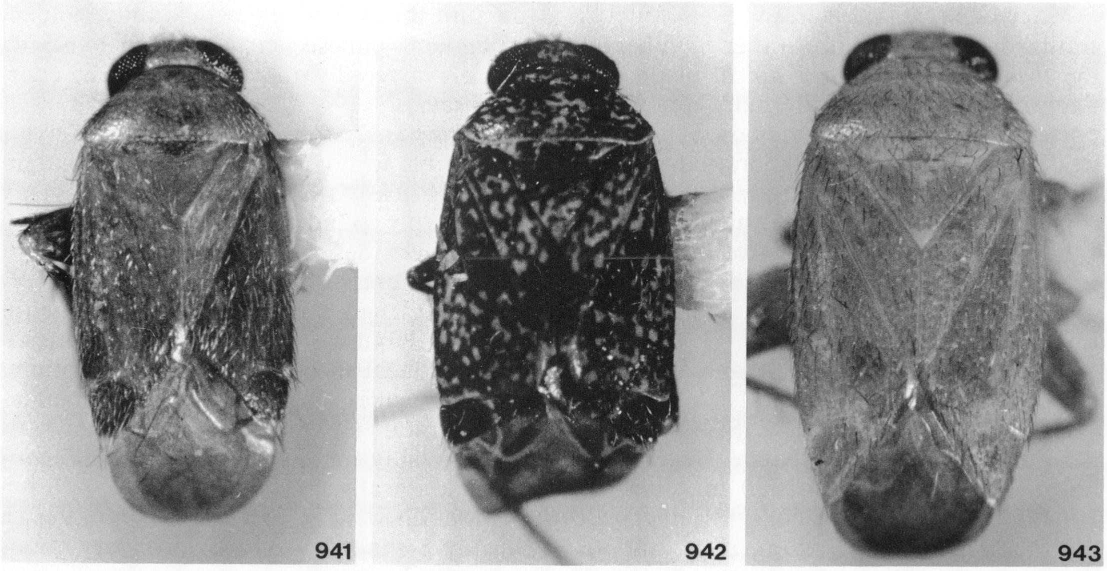
PARATYPES: Same data as holotype (AMNH, Bishop), 1♂, 1♀. MALAYSIA: *Malaya:* Kuala Lumpur, May 10, 1923, October 8, 1937, September 25, 1938 (Miller; BMNH), 1♂, 2♀♀.

DISCUSSION: In general appearance *Campylomma malaysiana* resembles *C. sclephracantha* as well as *Paramixia singalensis.* The form of the apical process of the vesica is unique.

Campylomma marjorae, new species
Figures 808, 809, 941, 944–948

DIAGNOSIS: Recognized among the species with a completely black second antennal segment by its small size, red-orange coloration, and the form of the vesical blades.

DESCRIPTION: Macropterous male. Small,



FIGS. 941–943. *Campylomma* spp. 941. *C. marjorae,* holotype. 942. *C. marmarosa,* holotype. 943. *C. marquesana,* holotype.

elongate, nearly parallel-sided, length apex tylus-cuneal fracture 1.34, width pronotum 0.73; basic coloration red-orange; prolegs, including coxae, mesofemora and coxae, and all tibiae and tarsi yellow-white; membrane smoky, veins red-orange; antennal segments one and two black; all black femoral and tibial spines and meso- and meta-femoral trichobothria with black bases.

Dorsum smooth, weakly shining, covered with reclining, pale, common setae, and corium and clavus also with subappressed, flattened, nearly woolly, shining setae.

Frons flat in dorsal view; labium just reaching apex of metacoxae; spicules on dorsal surface of metafemur black, in a neat row; parempodia slightly enlarged, weakly curved and convergent apically.

MALE GENITALIA: Figures 946–948. Apical vesical blades simple, smoothly curved (some non-Philippine specimens appear to have only a single blade).

FEMALE: Macropterous. Similar to male; most notably differing in the nearly white second antennal segment with a black basal ring.

FEMALE GENITALIA: Posterior wall simple.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Marjorie Statham Favreau.

DISTRIBUTION: Figures 808–809. Sri Lanka, Thailand, Philippine Islands, Solomon Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Negros Island:* Dumaguete, Camp Lookout, May 25, 1961, T. C. Schneirla and A. Reyes collectors; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype, but February 15–May 26, 1961 (AMNH, Bishop), 51♂♂, 117♀♀. PHILIPPINE ISLANDS: *Luzon:* Acupan, Banguet (Banks; AMNH), 1♂; Albay Prov., Libon, Caguscos, 200 m., May 20, 1965, light trap (Torrevillas; Bishop), 1♂; Camarines Sur Prov., Mt. Isarog, 20 km. E of Naga, 500–600 m., April 12, 1963 (Torrevillas; Bishop), 1♂; Mountain Prov., Liwo, 8 km. E of Mayoyao, 1000–1300 m., June 7, 1967, light trap (Torrevillas; Bishop), 1♂; Mountain Prov., Abatan, Buguias, 60 km. S of Bontoc, 1800–2000 m., May 24–25, 1964 (Torrevillas; Bishop), 1♀.

ADDITIONAL SPECIMENS: SOLOMON ISLANDS: *Guadalcanal:* Roroni, 35 km. E of Honiara, 10 m., May 7–12, 1964, light trap (Straatman; Bishop), 3♂♂. SRI LANKA: *Sabarangamuwa Prov.:* Rakwana, February 27–28, 1962, light trap (Brinck, Andersson, Cederholm; Lund), 10♂♂, 4♀♀. THAILAND: Banna, May 5–10, 1958, light trap (Maa; Bishop), 1♂.

Campylomma marmorosa, new species
Figures 809, 942, 949–951

Diagnosis: Recognized by the dirty white and deep blood red marmorate dorsum, and the form of the male genitalia, the vesica with very short apical spines at most barely extending beyond the secondary gonopore.

Description: Macropterous male. Body ovoid, length apex tylus-cuneal fracture 1.61, width pronotum 0.89; general coloration deep blood red to castaneous; dorsum except cuneus and membrane marmorate, marking with dirty white; inner margin of cuneus white (in line with vein of membrane demarcating small cell), membrane smoky, veins white; antennal segment two on proximal two-thirds, tibiofemoral articulation on femora, pro- and meso-tibiae, and all tarsi dirty yellow-white; metathoracic scent-gland evaporatory area white.

Dorsum smooth, dull, covered with reclining silvery, common setae.

Frons nearly straight in dorsal view, posterior margin of vertex nearly straight, somewhat broadly rounded; antennal segment two about one-third longer than width of head; labium reaching between apices of meso- and meta-coxae; cuneal incisure obsolete; row of spicules on metafemora straight and entire; parempodia very slightly enlarged, convergent apically.

Male Genitalia: Figures 949–951. Vesica short, stocky, C-shaped, weakly twisted, secondary gonopore terminal, apical process in the form of a barbed, clublike structure attaining apex of vesica and a heavily sclerotized hooklike spine attaining middle of gonopore; phallotheca weakly bent, attenuated apically, heavily sclerotized on dorsal surface.

Female: Macropterous. Similar to male except relatively broader and more ovoid, antennal segment two more slender and strongly tapering towards base than in male.

Female Genitalia: Not examined.

Measurements: See Appendix.

Etymology: Named for the pattern of coloration of the dorsum; from the Latin, *marmorosus,* marble-like.

Distribution: Figure 809. Eastern New Guinea.

Holotype ♂: PAPUA NEW GUINEA: *Northern Prov.:* Kokoda, 400 m., November 15–20, 1965, light trap, J. and M. Sedlacek collectors; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype (AMNH, Bishop), 2♂♂. PAPUA NEW GUINEA: *Western Highlands Prov.:* Baiyer River, 1150 m., October 17, 1958, light trap (Gressitt; Bishop), 1♀.

Discussion: This is the only known species of *Campylomma* with a marmorate color pattern.

Campylomma marquesana Knight
Figures 813, 943, 952–957

Campylomma marquesana Knight, 1938b, p. 181.
Campylomma adamsoni Knight, 1938b, p. 182. NEW SYNONYMY.
Campylomma luteola Knight, 1938b, p. 183. NEW SYNONYMY.

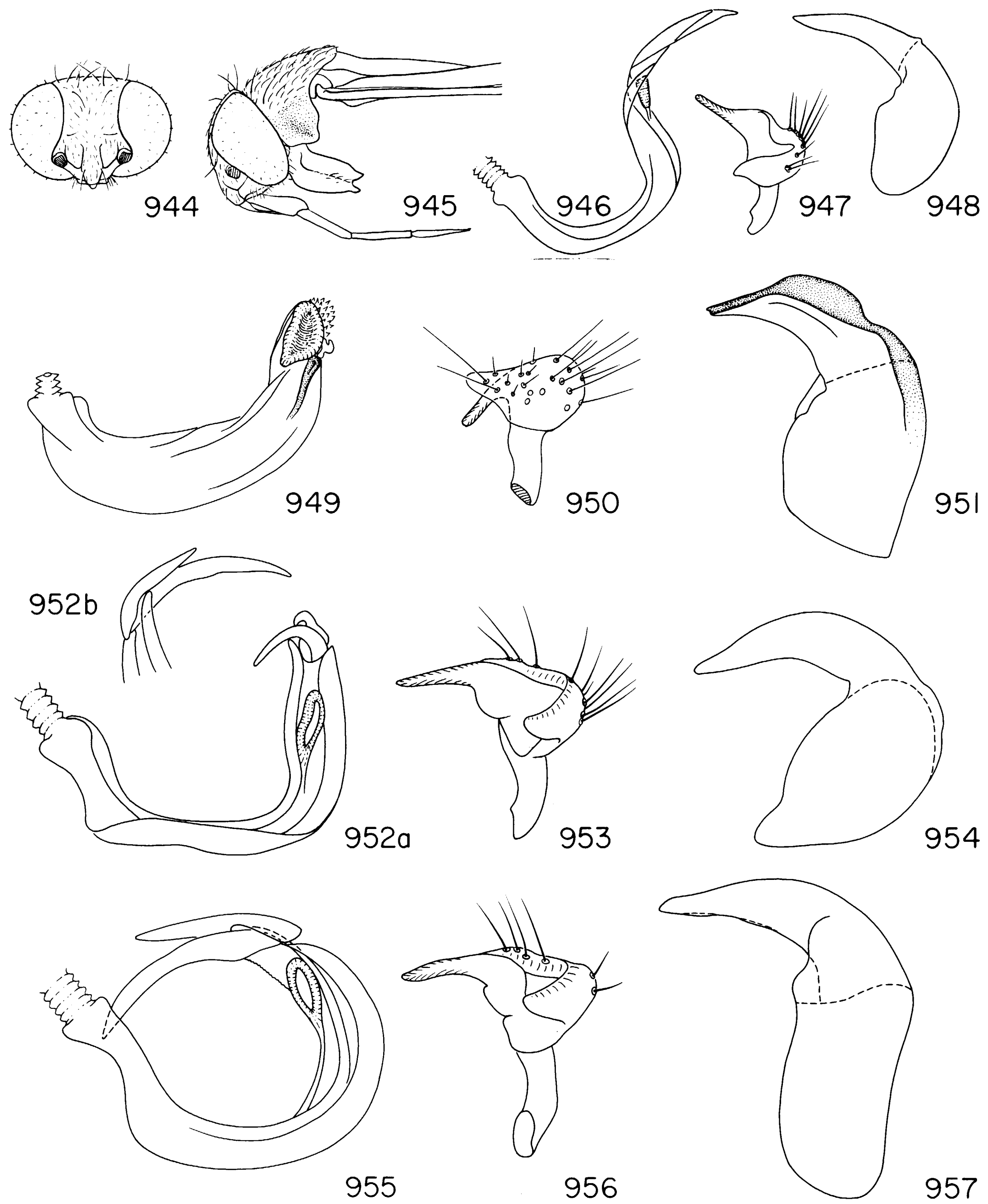
Diagnosis: Recognized among those species with a unicolorous light antennal segment two by the generally light color of the dorsum and the form of the vesical blades; quite variable in size with limited variation in head shape and of the male genitalia (see figs. 952–957).

Description: Macropterous male. Body elongate elliptical, length apex tylus-cuneal fracture 1.63 (1.58–2.00), width pronotum 0.94 (0.83–1.08); general coloration yellow or yellow-white; black femoral spines and meso- and meta-femora trichobothria with black bases; black tibial spines with small dark bases.

Dorsum smooth, dull, covered with reclining common setae ranging from brown to light yellow.

Frons nearly straight to slightly bulging and rounded in dorsal view; labium reaching to between meso- and meta-coxae; spicules on dorsal surface of metafemur black, in a complete but somewhat undulating row; parempodia noticeably enlarged, curved, flattened and convergent apically.

Male Genitalia: Figures 952–957. Apical vesical blades directed upward with vesica viewed laterally; blades more or less smooth,



FIGS. 944–957. *Campylomma* spp. 944–948. *C. marjorae.* 944. Frontal view of head, ♂. 945. Lateral view of head and prothorax, ♂. 946. Vesica. 947. Left paramere. 948. Phallotheca. 949–951. *C. marmarosa.* 949. Vesica. 950. Left paramere. 951. Phallotheca. 952–957. *C. marquesana.* 952a. Vesica. 952b. Detail of apex of vesica. 953. Left paramere. 954. Phallotheca. 955. Vesica. 956. Left paramere. 957. Phallotheca.

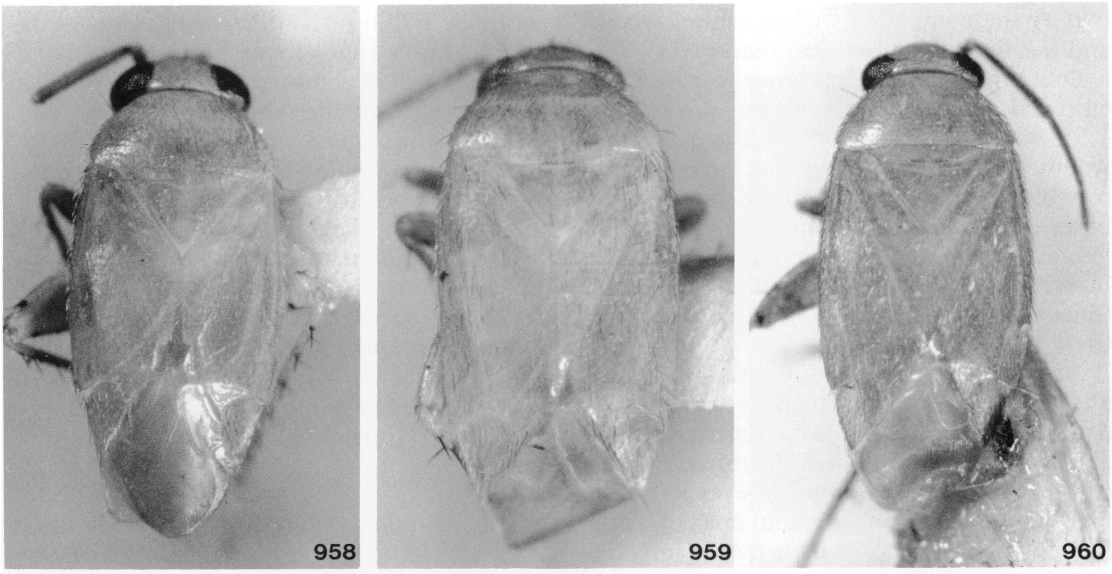
curved to nearly straight, strongly unequal in length, very similar in form to *breviata.*

FEMALE: Not positively identified.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 813. Marquesas Islands.

SPECIMENS EXAMINED: MARQUESAS ISLANDS: *Eiao:* uplands toward north end,



FIGS. 958–960. *Campylomma* spp. 958. *C. marshallensis*, ♂, Marshall Islands, Kwajalein Atoll. 959. *C. minuenda*, holotype. 960. *C. monticola*, ♀, holotype.

east side, 1855 feet, September 29, 1929, on *Hibiscus tileaceus* (Adamson; AMNH, Bishop), 7♂♂ (including holotype of *adamsoni*); near center, 1450 feet, October 1, 1929, on *Melochia velutina* (Adamson; Bishop), 1♂; near center, 1665 feet, September 28, 1929, on *Hibiscus tileaceus* (Adamson; Bishop), 2♂♂; near center, 1500 feet, April 22, 1931, on *Dodonea viscosa* (LeBronnec; Bishop), 1♂; about Vaituha, 1100 feet, October 2, 1929, on *Dodonea viscosa* (Adamson; Bishop), 2♂♂. *Fatu Hiva:* Quia Valley, near sea level, September 2, 1930, on *Ocimum basilicus* (LeBronnec; Bishop), 2♂♂. *Fatu Uku:* 860 feet, November 19, 1930, on *Morinda citrifolia* (Taura; Bishop), 3♂♂ (including holotype of *luteola*). *Hivaoa:* Avaoa Valley, 1350 feet, January 4, 1932, at light (LeBronnec; Bishop), 4♂♂; Kaava Ridge, 200 feet, October 27, 1931, on *Glochidion ramiflorus* (LeBronnec; Bishop), 1♂; Kaava Ridge, 2460 feet, January 6, 1932, at light (LeBronnec; AMNH, Bishop), 5♂♂ (including holotype of *marquesana*); Tahauku, July 10, 1929, near shore (Mumford and Adamson; Bishop), 1♂; Teava uhua: te Kohu, February 15, 1930, on *Hibiscus tileacus* (Mumford and Adamson; Bishop), 1♂; [no data], October November, 1922 (Washburn; Bishop), 1♂. *Uapou:* Teoatea, Hakahatau Valley, 1950 feet, November 16, 1931, *Metrosideros collina* (LeBronnec; Bishop), 1♂.

One additional specimen, with the following locality data, has male genitalia that agree closely with specimens of *marquesana*; it was identified as a paratype of *tinctipennis* by Knight: Nuku Hiva, Tekao Hill, 3020 feet, July 23, 1931, on *Weinmannia parviflora.*

DISCUSSION: In describing *Campylomma adamsoni, C. luteola,* and *C. marquesana,* Knight (1938b) apparently considered them closely related in that he placed them in sequence in his paper and compared them to one another in his diagnoses. He also keyed them out in one section of his key, "species with rostrum extending upon posterior coxae."

I was unable to distinguish between these named taxa using Knight's key. Dissection of the male genitalia indicated that even though some variation exists, it exhibits no consistent pattern (see figs. 952–957).

Campylomma marshallensis Usinger

Figures 813, 958, 964–966

Campylomma marshallensis Usinger, 1952, p. 523.

DIAGNOSIS: Recognized among the species with the black basal ring on antennal segment two by the completely yellow-white dorsum and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body elliptical, length apex tylus-cuneal fracture 1.55, width pronotum 0.83; basic coloration yellow white; antennal segment two with narrow black basal ring; all tibial spines black; bases of spines on antennal segment one, all femora, and proximal one-half of all tibiae black; bases of spines on distal one-half of all tibiae light; bases of meso- and meta-femoral trichobothria black.

Dorsum smooth, weakly shining, hemelytra subhyaline; dorsum covered with relatively short, reclining, pale, common setae.

Frons weakly rounded, forming smooth curve with anterior margin of eyes in dorsal view; labium reaching to about apex of metacoxae; spicules on dorsal surface of metafemur brown, in a somewhat irregular, occasionally interrupted row; parempodia setiform, weakly curved, and convergent apically.

MALE GENITALIA: Figures 964–966. Apical vesical blades long, slender, nearly equal in length, posterior blade gently curved, anterior undulating.

FEMALE: Macropterous. Similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 813. Gilbert Islands, Marshall Islands, Phoenix Islands (see also discussion under *lividicornis*).

SPECIMENS EXAMINED: GILBERT ISLANDS: *Abemana Atoll:* Kariatebike, 0–5 m., January 1970 (Krauss; AMNH, Bishop), 3♂♂, 6♀♀; Kenna Island, 0–5 m., January 17, 1970 (Krauss; Bishop), 1♂; Tebanga, 0–5 m., January 1970 (Krauss; Bishop), 4♂♂, 2♀♀. *Aranuka Atoll:* November 20, 1964 (Perkins; Bishop), 3♂♂, 3♀♀. *Butaritari Atoll:* Butaritari Island, December 1957 (Krauss; Bishop), 1♂. *Kuria Atoll:* November 19, 1964 (Perkins; Bishop), 1♂. *Tarawa Atoll:* Bairiki Island, November 1957 (Krauss; Bishop), 3♀♀; Bikenibeu, 0–5 m., January 1970 (Krauss; AMNH, Bishop), 5♀♀. MARSHALL ISLANDS: *Kwajalein Atoll:* September 12, 1956, light trap (Clagg; AMNH, Bishop), 6♂♂, 5♀♀. *Likiep Atoll:* Likiep Islet, August 30, 1946 (Townes; USNM), 16♂♂, 11♀♀. *Majuro Atoll:* Ulija, November 4, 1953 (Beardsley; Bishop), 1♂. PHOENIX ISLANDS: *Canton Island:* March 1956 (Krauss; USNM), 1♂.

DISCUSSION: Described originally from Likiep Atoll in the Marshall Islands, *marshallensis* was subsequently synonymized by Carvalho (1956b) with *lividicornis,* thus giving it an apparently much wider distribution. Examination of the male genitalia indicates that *marshallensis* is not conspecific with any species from the Philippines; thus, I treat it as a valid species (see also discussions under *lividicornis* and *wakeana*).

Campylomma minuenda Knight

Figures 813, 959, 967–969

Campylomma minuenda Knight, 1938b, p. 186.

DIAGNOSIS: Recognized among those species with a unicolorous light antennal segment two by its nearly white coloration, relatively small size, dimensions of the head and pronotum and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body elliptical, length apex tylus-cuneal fracture 1.47 (1.40–1.60), width pronotum 0.82 (0.75–0.90); basic coloration nearly white or yellow-white; tibial spines black without conspicuous black bases; spines on all femora and meso- and meta-femoral trichobothria with brown or black bases.

Dorsum smooth, dull, covered with reclining, nearly white, common setae.

Vertex broad relative to total width of head, frons bulging in dorsal view; labrum distinctly surpassing apex of metacoxae; spicules on dorsal surface of metafemur brown in an irregular row; parempodia setiform, curving and convergent apically.

MALE GENITALIA: Figures 967–969. Apical vesical blades elongate relatively slender, weakly curved, unequal in length.

FEMALE: Not positively identified.

MEASUREMENT: See Appendix.

DISTRIBUTION: Figure 813. Marquesas Islands: Fatu Hiva, Ua Huku.

SPECIMENS EXAMINED: MARQUESAS ISLANDS: *Fatu Hiva:* Quia Valley, 500 feet, September 2, 1930, beating *Melochia velutina,* (LeBronnec; Bishop), 2♂♂. *Tahuata:* Motopu, 15 feet, July 17, 1930, on *Sida* sp. (LeBronnec and Taura; AMNH, Bishop), 8♂♂; Tahuata, 100 feet, June 7, 1930, on *Sida* sp.

(LeBronnec and Taura; Bishop), 2♂♂. *Ua Huku:* Teanatuhiva, 300 feet, March 18, 1931, on *Waltheria americana* (LeBronnec and Taura; AMNH, Bishop), 10♂♂; Teavamataiki, 730 feet, March 24, 1931, on *Melochia velutina* (LeBronnec and Taura; AMNH, Bishop), 8♂♂ (including holotype).

Campylomma monticola Poppius

Figures 808, 960

Campylomma monticola Poppius, 1914c, p. 170.

DIAGNOSIS: See *Campylomma* near *monticola.*

DISTRIBUTION: Java.

DISCUSSION: Described by Poppius from Java on the basis of a single female specimen, and with no male specimens available, this named taxon cannot be adequately diagnosed. The holotype, which is deposited in the Helsinki Museum (no. 10352) does, however, closely resemble male and female specimens from the Philippines. I have given a brief description of that material below under the heading "near *monticola.*"

Campylomma near *monticola* Poppius

Figures 808, 970, 971

DIAGNOSIS: Recognized by the almost uniformly black antennae, orangish coloration, parallel-sided body form, and structure of the vesica.

DESCRIPTION: Macopterous male. Elongate nearly parallel-sided, length apex tylus-cuneal fracture 1.66, width pronotum 0.88; general coloration light orange or yellow-orange; all antennal segments nearly black, except interior surface of segment one somewhat lighter; pro- and meso-femoral spines and all black tibial spines and mesofemoral trichobothria with small black bases; metafemoral spines and trichobothria with heavy black bases.

Dorsum smooth, dull, covered with reclining, light, common setae.

Eyes very large, vertex appearing narrow, frons nearly flat in dorsal view; rostrum reaching about midway onto mesocoxae; spicules on dorsal surface of metafemur black, in a complete undulating row; parempodia not observable in available specimens.

MALE GENITALIA: Figures 970 and 971. Anterior apical vesical blade arched, weakly sinuous, relatively slender; posterior blade weakly sclerotized, broadened on basal two-thirds, strongly attenuated on apical one-third, with some glossy spicules on membranous-appearing area, lying just below anterior blade.

FEMALE: Macropterous. Body form more robust, elliptical, eyes, smaller than in male; frons and eyes rounded in dorsal view; similar to holotype female of *monticola* from Java.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 808. Philippine Islands.

SPECIMENS EXAMINED: PHILIPPINE ISLANDS: *Negros Oriental:* near Mt. Talinas, 1020 m., June 8, 1958, light trap in rain forest (Milliron; Bishop), 2♂♂, 1♀.

DISCUSSION: The male specimens described above may represent that sex of *monticola* Poppius. Even though a considerable disjunction exists in the range of known localities, this is not out of line when the distributions of some better collected species of *Campylomma* are considered (e.g., *marjorae, livida*).

Campylomma nigra, new species

Figures 809, 961, 972–974

DIAGNOSIS: Very similar to *atra* except all femora nearly black, except lighter at tibio-femoral articulation.

DESCRIPTION: Length apex tylus-cuneal fracture 1.48, width pronotum 0.90; structure as in *atra* except all femora nearly black, only tibio-femoral articulation being light.

MALE GENITALIA: Figures 972–974. General structure very similar to that of *atra.*

MACROPTEROUS FEMALE: Structurally similar to male.

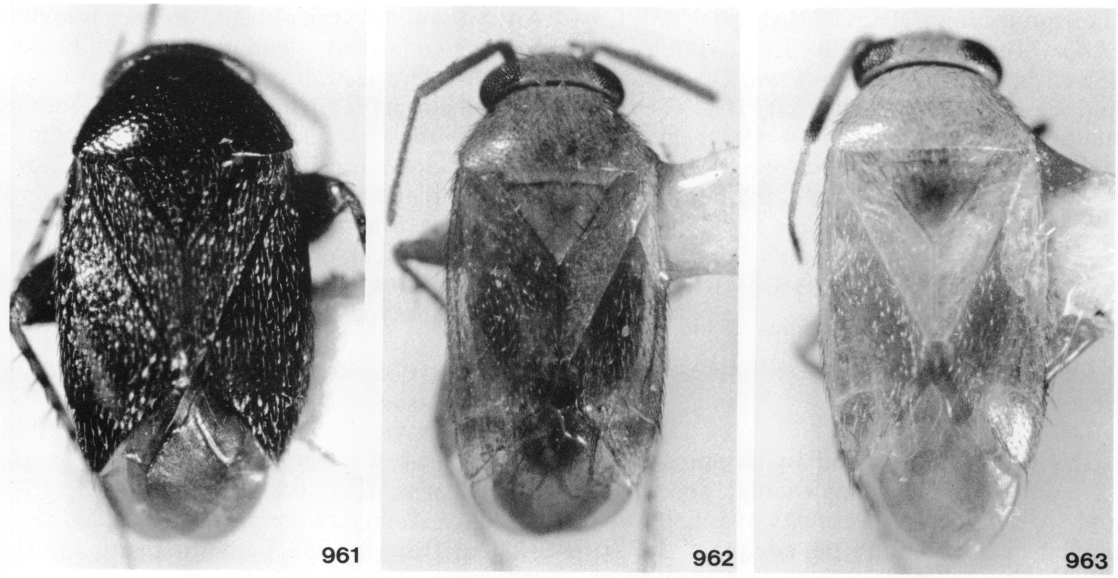
FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Latin *nigra,* black.

DISTRIBUTION: Figure 809. Solomon Islands: Bougainville, Guadalcanal.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Bougainville Prov.:* Bougainville, Buin, June 2, 1956, E. J. Ford, Jr. collector; deposited in B. P. Bishop Museum, Honolulu.



FIGS. 961–963. *Campylomma* spp. 961. *C. nigra*, ♂, paratype, Papua New Guinea, Bougainville. 962. *C. noumeae*, holotype. 963. *C. novocaledonica*, holotype.

PARATYPES: PAPUA NEW GUINEA: *Bougainville Prov.:* Bougainville Buin (Kangu), 1–50 m., May 31, 1956, light trap (Gressitt; AMNH, Bishop), 2♂♂, 1♀. SOLOMON ISLANDS: *Guadalcanal:* Ilu Farm, December 26, 1953–January 4, 1954 (Bradley; BMNH), 1♂; Honiara, September 8–October 10, 1953 (Bradley; BMNH), 2♀♀; Lama, nr. Mt. Tatuve, 300 m., May 18, 1960, light trap (O'Brien; Bishop), 1♂.

ADDITIONAL SPECIMENS: INDONESIA: *West Irian:* Hollandia area, Cyclops Mountains, W of Sentani, 50–100 m., June 22–24, 1959, light trap (Maa; Bishop), 1♀.

DISCUSSION: See *C. atra.*

Campylomma noumeae, new species

Figures 809, 962, 975–977

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two by its coloration and the form of the vesical blades; vesica similar to *C. pacificae* which has approximately the distal one-fourth of antennal segment two black.

DESCRIPTION: Macropterous male. Body stocky, more or less parallel-sided, length apex tylus-cuneal fracture 1.58, width pronotum 0.87; general coloration ranging from dirty yellow to dirty yellow-orange; antennal segment two basally (and sometimes segment one distally) with a narrow black ring; spines on antennal segment one, on all femora, and generally on tibiae with black bases; meso- and meta-femoral trichobothria with strong black bases; all tibial spines black.

Dorsum smooth, at most weakly shining, covered with dark reclining common setae, and clavus and corium with flattened, subappressed, shining setae (giving a somewhat woolly appearance).

Frons weakly rounded, forming smooth curve with anterior margin of eyes in dorsal view; rostrum not quite reaching apex of metacoxae; spicules on dorsal surface of metafemur black, in a neat row; parempodia at most slightly enlarged, curved and converging apically.

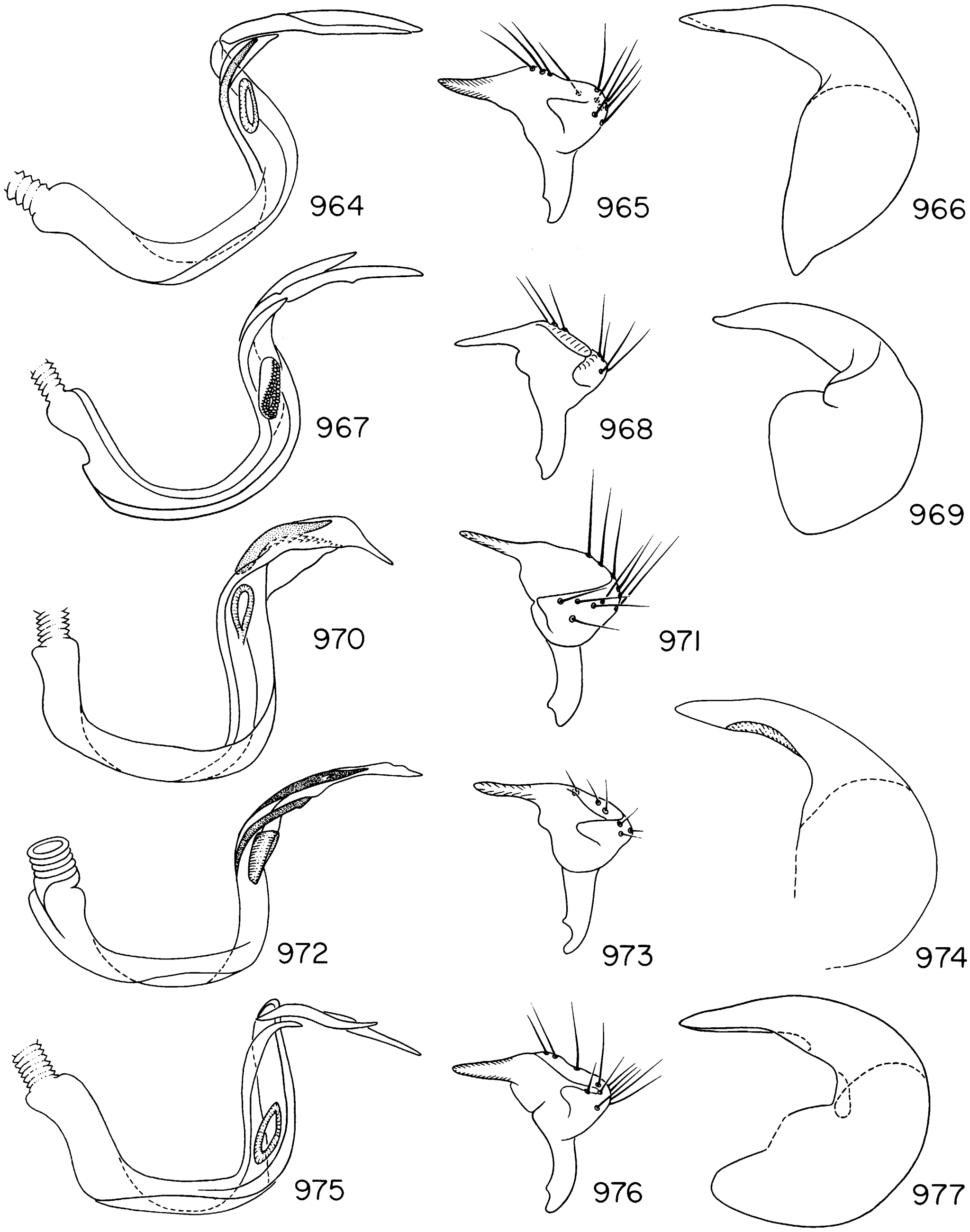
MALE GENITALIA: Figures 975–977. Apical vesical blades elongate, slender, of unequal length, anterior sinuous, posterior weakly curved basally, straight tapered and pointed apically.

FEMALE: Macropterous. Structurally similar to male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Noumea, the capital city of New Caledonia.



FIGS. 964–977. *Campylomma* spp. male genitalia. 964–966. *C. marshallensis.* 964. Vesica. 965. Left paramere. 966. Phallotheca. 967–969. *C. minuenda.* 967. Vesica. 968. Left paramere. 969. Phallotheca. 970, 971. *C. monticola.* 970. Vesica. 971. Left paramere. 972–974. *C. nigra.* 972. Vesica. 973. Left paramere. 974. Phallotheca. 975–977. *C. noumeae.* 975. Vesica. 976. Left paramere. 977. Phallotheca.

DISTRIBUTION: Figure 809. New Caledonia.

HOLOTYPE ♂: NEW CALEDONIA: Thio, March 1959, N. L. H. Krauss collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 3♂♂. NEW CALEDONIA: Anse Vata, November 8, 1958, at light (Joyce; AMNH, Bishop), 3♂♂; Bourail, February 4–6, 1963 (Gressitt, Krauss, and Yoshimoto; Bishop), 3♂♂; La Crouen, January 31, 1963 (Yoshimoto and Krauss; Bishop), 1♂, La Foa, February 3, 1945 (Milliron; Bishop), 1♂; Mokoue to Dothio, 100–350 m., March 22, 1968 (Gressitt and Maa; Bishop), 1♀; Mt. Koghi, Foret de Thi, 530 m., March 8, 1961 (Sedlacek; Bishop), 1♂; Mt. Mou, 600 m., March 7, 1972 (Gressitt; Bishop), 1♂; Noumea, February 1959, February 28, 1960, January 1962, March 1973 (Gressitt and Krauss; AMNH, Bishop), 7♂♂, 3♀♀.

Campylomma novocaledonica, new species

Figures 813, 963, 981–983

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two by the black distal one-third of segment two, the generally infuscate scutellum often in contrast with the somewhat lighter pronotum, and the shape of the vesical blades.

DESCRIPTION: Macropterous male. Body elongate elliptical, length apex tylus-cuneal fracture 1.51, width pronotum 0.83; basic coloration dirty yellow or light yellow-brown; scutellum, posterior portion of corium, thoracic pleura, abdomen, and distal one-half of metafemur usually infuscate; membrane smoky; distal one-half of antennal segment one, basal ring and distal one-third of antennal segment two, bases of all femoral spines and meso- and meta-femoral trichobothria, and bases of black tibial spines on proximal one-half of all tibiae black; metafemur with some additional brown spotting.

Dorsum smooth, weakly shining, covered with reclining, brown, common setae, and corium and clavus with appressed, flattened, shining setae.

Frons and anterior margins of eyes forming a smooth curve in dorsal view; labium just surpassing apex of mesocoxae; abdomen broadly joined to thorax; spicules on dorsal surface of metafemur black, in a neat row; parempodia setiform, weakly curved and convergent apically.

MALE GENITALIA: Figures 981–983. Apical vesical blades of unequal length, smoothly curved, tapering and pointed apically.

FEMALE: Macropterous. Structurally similar to males, eyes somewhat smaller, head rounded in dorsal view, and antennal segment two more slender than in male.

FEMALE GENITALIA: Not examined.

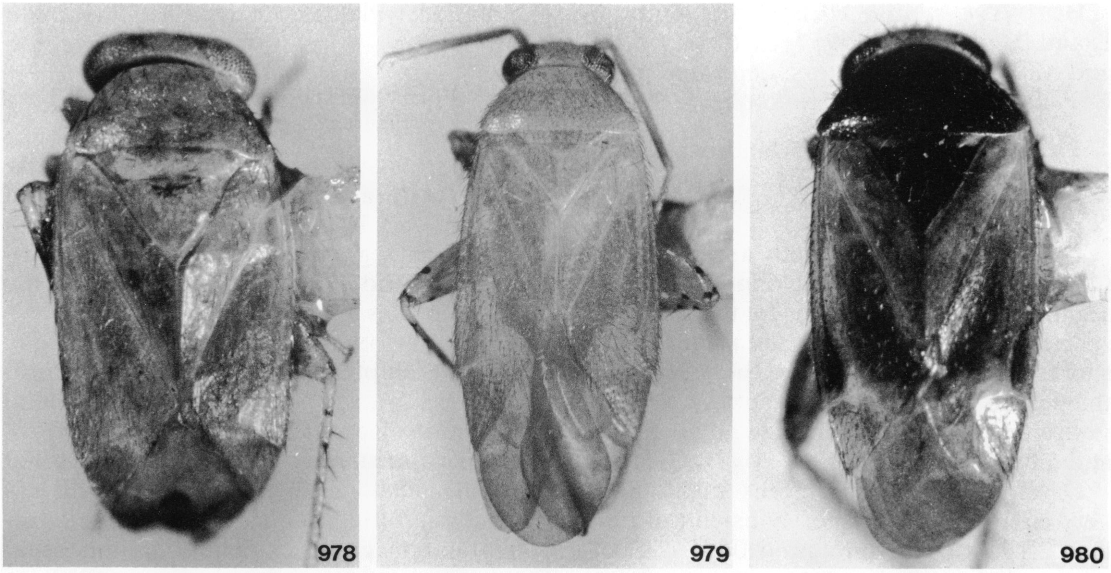
MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in New Caledonia.

DISTRIBUTION: Figure 813. New Caledonia, Kermadec Islands, Norfolk Island, and New Zealand.

HOLOTYPE ♂: NEW CALEDONIA: 3 km., SE of Coulee, January 23, 1963, C. M. Yoshimoto collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 1♀. NEW CALEDONIA: Bourail, February 5, 1963 (Gressitt, Krauss, and Yoshimoto; Bishop), 1♀; Col d'Amieu, 130 km. N of Noumea, 350–650 m., November 13, 1963 (Straatman; Bishop), 1♂; Col de Pitechicara, 300–450 m., January 8, 1969 (Krauss; Bishop), 1♂; Concepcion, November 17, 1944 (Crabb; USNM), 1♂; Mt. Koghi, January 27, 1963 (Yoshimoto; Bishop), 1♂; Mt. Koghi, 400–600 m., January 1969 (Krauss; Bishop), 1♂; Mt. Mou, 1000 m., March 9, 1972, ex *Cunonia* (Gressitt; Bishop), 1♂; mountain stream up Boulari River, November 3, 1958, light trap (Joyce; Bishop), 1♂; Mokoue to Dothio, 150–500 m., March 20–22, 1968 (Gressitt; Bishop), 1♀; Noumea, July 21, 1940, swept off *Lantana* (Williams; Bishop), 1♀; Noumea, September 6, 1940, beaten ex *Acacia* sp. and *Acacia farnesiana* (Williams; Bishop), 1♂, 2♀♀; Noumea, October 20, 1940, at light (Williams; Bishop), 1♂; Noumea, July 6, ex *Lantana* (Bishop), 1♂; Noumea, May 1950, February 28, 1960, February 20, 1963, March 1973 (Gressitt, Krauss, and Yoshimoto; AMNH, Bishop), 7♂♂, 1♀; on heights between Thio and Nakety, November 12, 1958, at light (Joyce; Bishop), 2♂♂; Paagoumene, 0–20 m., January 31, 1971 (Krauss; Bishop), 1♀; Plaine de Lacs, February 2, 1963 (Yoshimoto; Bishop), 4♂♂, 3♀♀; Plateau de Dogny, March 29, 1968 (Gressitt and Maa; Bishop), 1♂; Plum, 20–60 m., March 23–25, 1968 (Maa; Bishop), 1♂; Poindime, 0–50 m., January 1969 (Krauss; Bishop), 1♂. NEW



FIGS. 978–980. *Campylomma* spp. 978. *C. novohebridense,* holotype. 979. *C. novoirlandense,* holotype. 980. *C. pacificae,* holotype.

ZEALAND: ND, Gorge, Mangamuka River, January 2, 1978 (Polhemus and Polhemus; Polhemus), 1♂. NORFOLK ISLAND: Cook Monument Road, Lantana, December 29, 1977 (Polhemus; AMNH, Polhemus), 41♂♂, 12♀♀.

ADDITIONAL SPECIMENS: KERMADEC ISLANDS: *Raoul Island:* January 16–25, 1967, in MV light trap (Watt; DSIR), 10♂♂, 4♀♀; January 7–8, 1973, in hotel garden (Irland; DSIR), 1♀.

DISCUSSION: The specimens from Raoul Island in the Kermadec group are uniformly larger than those from New Caledonia although the structure of the male genitalia is virtually identical.

Campylomma novohebridense,
new species
Figures 810, 978, 984–986

DIAGNOSIS: Recognized among those species with a unicolorous light second antennal segment by the very broad head relative to the pronotum, the slightly depressed vertex, and especially by the apical structure of the vesica, which lacks the apical blades present in most *Campylomma* species.

DESCRIPTION: Macropterous male. Body moderately elongate, length apex tylus-cuneal fracture 1.78, width pronotum 0.90; general coloration tan or dirty yellow; bases of spines on antennal segment one, all femora, and proximal one-half of all tibiae black; meso- and meta-femoral trichobothrial bases black; all femora with fairly extensive additional brown spotting.

Dorsum smooth, dull, covered with reclining, brown, common setae, and some slightly flattened slight setae on clavus and corium.

Head strongly transverse vertex weakly depressed, frons straight across in dorsal view; labium not quite attaining apex of metacoxae; lateral hemelytral margins weakly convexly rounded; spicules on dorsal surface of metafemora black, in an uninterrupted but strongly irregular row; parempodia setiform, straight.

MALE GENITALIA: Figures 984–986. Vesica more or less U-shaped, with a single fingerlike apical process; secondary gonopore not conspicuously developed; phallotheca and left paramere typical for *Campylomma.*

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in the New Hebrides.

DISTRIBUTION: Figure 810. New Hebrides.

HOLOTYPE ♂: NEW HEBRIDES: Ambrym Island, September 5, 1957, ex *Casuarina,* J. and M. Sedlacek collectors; deposited in the B. P. Bishop Museum, Honolulu.

Campylomma novoirlandense, new species

Figures 810, 979, 987–989

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two as belonging to the group of species including *livida* by the presence of a short, thumblike process on the left side of the genital capsule and the structure of the vesica; in that group recognized by the body and antennal dimensions.

DESCRIPTION: Macropterous male. Body very elongate, length apex tylus-cuneal fracture 2.18, width pronotum 1.05; basic coloration light yellow; antennal segment two with black basal ring; black spines on antennal segment one and all femora and tibiae, and meso- and meta-femoral trichobothria with black bases.

Dorsum smooth, at most weakly shining, covered with reclining, light brown, common setae, and some flattened, shining, subappressed setae on clavus and corium.

Vertex narrow, frons nearly flat in dorsal view; labium just surpassing apex of metacoxae; lateral corial margins weakly convex; spicules on dorsal surface of metafemur black, in a neat row; parempodia setiform, slightly curved and converging apically.

MALE GENITALIA: Figures 987–989. Vesica similar to that of other species of the group including *livida*; anterior apical blade of vesica relatively short, sinuous, with many spicules on dorsal surface; glassy spicules associated with less heavily sclerotized elaborations of posterior blade.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in New Ireland.

DISTRIBUTION: Figure 810. New Ireland.

HOLOTYPE ♂: PAPUA NEW GUINEA: *New Ireland Prov.:* New Ireland, Kandan, January 1, 1960, W. W. Brandt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 1♂. PAPUA NEW GUINEA: *New Ireland Prov.:* New Ireland, Schleinitz Mountains, Lelet Plateau, October 1959 (Brandt; Bishop), 1♂.

Campylomma pacificae, new species

Figures 813, 980, 990–992

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two by the black distal one-fourth of antennal segment two, the generally brown pronotum and scutellum, and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body elongate, elliptical, length apex tylus-cuneal fracture 1.54, width pronotum 0.84; general coloration medium brown; head at and below level of antennal insertion, vertex, corium basally and along cuneal fracture, and all legs including coxae, very light brown to dirty yellow; antennal segment one black on distal one-half, segment two with a narrow, black, basal ring and black on distal one-fourth; antennal segments three and four nearly black; black spines on all femora and proximal one-half of all tibiae with black bases; other tibial spines black without black bases; meso- and meta-femoral trichobothria with black bases; metafemora with rather extensive additional brown spotting.

Dorsum smooth, dull, covered with reclining, brown to black, common setae, and clavus and corium with flattened, weakly shining, subappressed setae.

Frons forming a smooth curve with anterior margins of eyes in dorsal view; labium reaching nearly to apex of metacoxae; spicules on dorsal surface of metafemur in a complete, but somewhat irregular row; parempodia setiform, curved, convergent apically.

MALE GENITALIA: Figures 990–992. Apical vesical blades relatively long, slender, subequal in length, anterior nearly straight, posterior weakly curved.

FEMALE: Macropterous. Tentatively associated specimens generally lighter than male, dirty yellow; eyes smaller, head strongly rounded anteriorly in dorsal view.

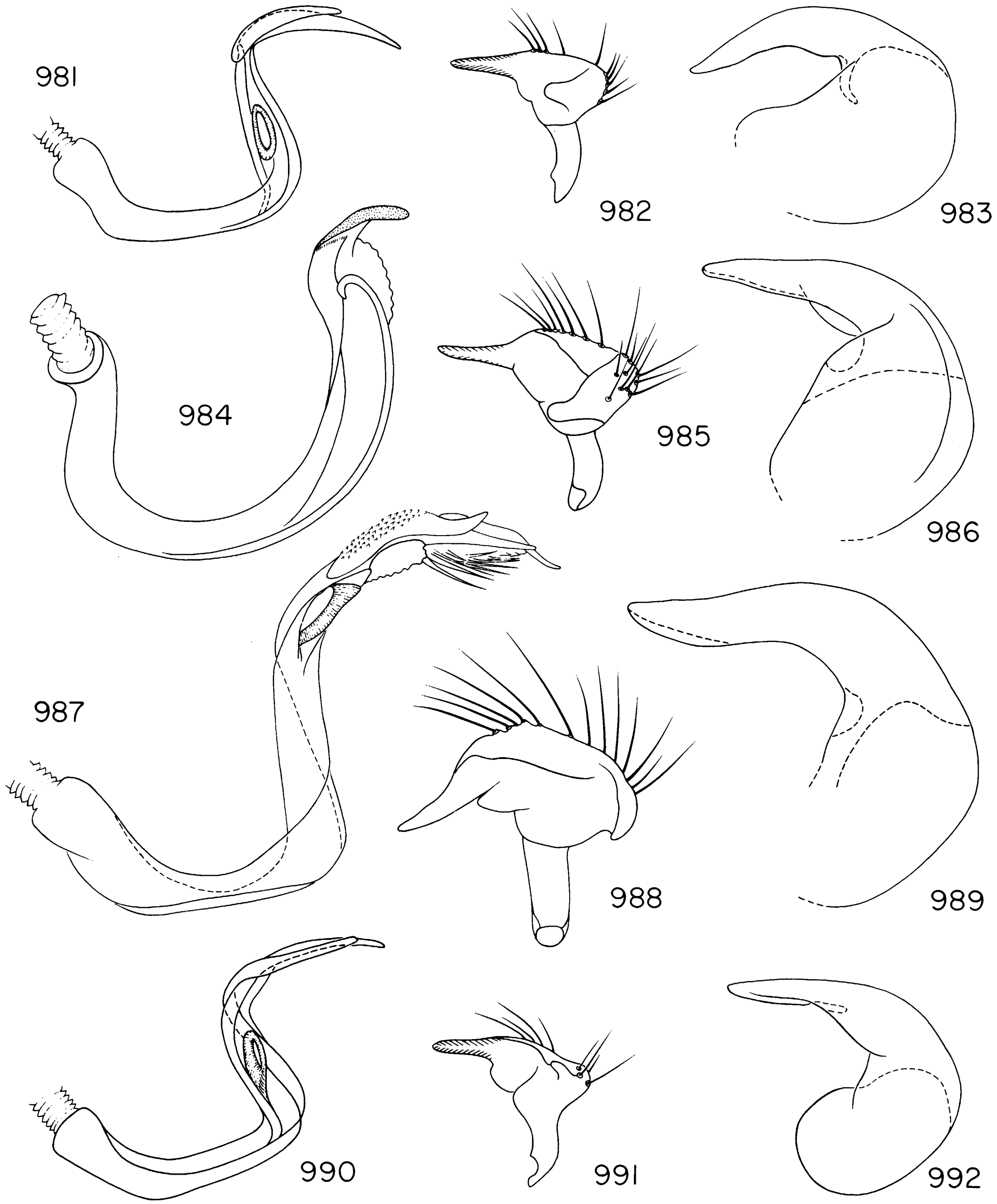
FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in the southwest Pacific.

DISTRIBUTION: Figure 813. New Hebrides, Samoa, and Tonga.

HOLOTYPE ♂: TONGA ISLANDS: Tonga-



FIGS. 981–992. *Campylomma* spp. male genitalia. 981–983. *C. novocaledonica.* 981. Vesica. 982. Left paramere. 983. Phallotheca. 984–986. *C. novohebridense.* 984. Vesica. 985. Left paramere. 986. Phallotheca. 987–989. *C. novoirlandense.* 987. Vesica. 988. Left paramere. 989. Phallotheca. 990–992. *C. pacificae.* 990. Vesica. 991. Left paramere. 992. Phallotheca.

tapu, Nukualofa, 0–100 m., October 1969, N. L. H. Krauss collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: NEW HEBRIDES: *Efate Island:* Limestone Plateau N of Maat, 100 m., August 21, 1957, clearing (Gressitt; Bishop), 1♂; Vila, 10–20 m., August 13, 1957, light trap (Gressitt; Bishop), 1♂; Vila, 0–100 m., February 1970 (Krauss; AMNH, Bishop), 7♂♂. *Erramanga Island:* July 1930 (Cheesman; BMNH), 12♂♂. *Espiritu Santo:* Namatosopa, 300 m., August 29, 1957, light trap (Gressitt; Bishop), 2♂♂; Narango, 90 m., May 1960 (Brandt; Bishop), 3♂♂; [no data], August–November 1944 (Knight; USNM), 3♂♂. *Pentecost Island:* March 14, 1964 (Straatman; Bishop), 1♂. SAMOA: *Savii:* Asau, November 24–25, 1968 (Hocking; Bishop), 1♂. *Tutuila:* Naval Station, August 25, 1940, at light (Swezey; Bishop), 2♂♂; Fagatogo, January 7, 1964 (Spencer; Bishop), 2♂♂; Nuuuli, August 28, 1953, fresh cut log (Hoyt; Bishop), 1♂; Pago Pago, October 20, 1956, November 1, 1956 (Kellen; Bishop) 3♂♂, 2♀♀; Taputimu, September 6, 1963, October 30, 1963, December 16, 1963, August 19, 1964, October 13, 1964, November 14, 1964 (Spencer; Bishop), 7♂♂, 2♀♀. *Upolu:* Afiamalu, 1000 feet, July 16–21, 1940, at light (Swezey and Zimmerman; Bishop), 1♂, 5♀♀; Afiamalu, 2200 feet, June 10–July 5, 1940, at light (Swezey and Zimmerman; AMNH, Bishop), 2♂♂, 9♀♀; Afiamalu, June 25–28, 1940, at light (Swezey and Zimmerman; Bishop) 2♂♂; Vailima, 153–183 m., November 1969 (Krauss; Bishop), 2♂♂. TONGA ISLANDS: Same data as holotype (AMNH, Bishop), 24♂♂. *Tongatapu:* March 1966 (Krauss; USNM), 6♂♂; Mua, 30–100 m., March 20, 1969, November 1, 1969 (Krauss; Bishop), 2♂♂; Nukualofa, February 1956 (Krauss; Bishop), 2♂♂.

Additional Specimen: NEW HEBRIDES: *Espirito Santo:* August–November 1944 (Knight; Bishop), 1♂.

Discussion: Knight (1935, p. 197) recorded a single specimen of *Campylomma livida* from Samoa. Although I have not seen this specimen and he did not figure or describe it, I suspect that it was actually *pacificae.*

Campylomma palauana Carvalho

Figures 813, 993, 1002–1004

Campylomma palauana Carvalho, 1956b, p. 38.

Diagnosis: Recognized by the dark coloration, the almost totally black antennae, and the shape of the vesical blades.

Description: Macropterous male. Body elongate, more or less elliptical, length apex tylus-cuneal fracture 1.40, width pronotum 0.73; general coloration dark brown to nearly black; mesoscutum laterally, corium basally and along cuneal fracture, cuneus apically, labium, coxae, pro- and meso-legs, metafemur proximally and distally, and metatibiae dirty yellow; all tibiae with black spines with black bases; meso- and meta-femoral spines and trichobothria with black bases.

Dorsum smooth, scutellum weakly shining, hemelytra dull; dorsum covered with reclining; golden, common setae, and corium and clavus with flattened subappressed, shining setae.

Frons, and anterior margin of eyes forming a smooth weak curve in dorsal view; labium reaching to about apex of metacoxae; spicules on dorsal surface of metafemur black, in a neat row, obscured by dark femoral coloration; parempodia setiform, weakly curved, convergent apically.

Male Genitalia: Figures 1002–1004. Apical vesical blades relatively short, of unequal length, weakly curved.

Female: Macropterous. Similar to male, body more robust, eyes smaller, anterior margin of head rather strongly rounded in dorsal view.

Female Genitalia: Not examined.

Measurements: See Appendix.

Distribution: Figure 813. Palau Islands.

Specimens Examined: PALAU ISLANDS: northwest Auluptegel Island, 25 m., December 12, 1952, light trap (Gressitt; Bishop, USNM), 1♂, 1♀; southwest Koror, light trap, December 5, 1952 (Gressitt; USNM), 1♂ (holotype).

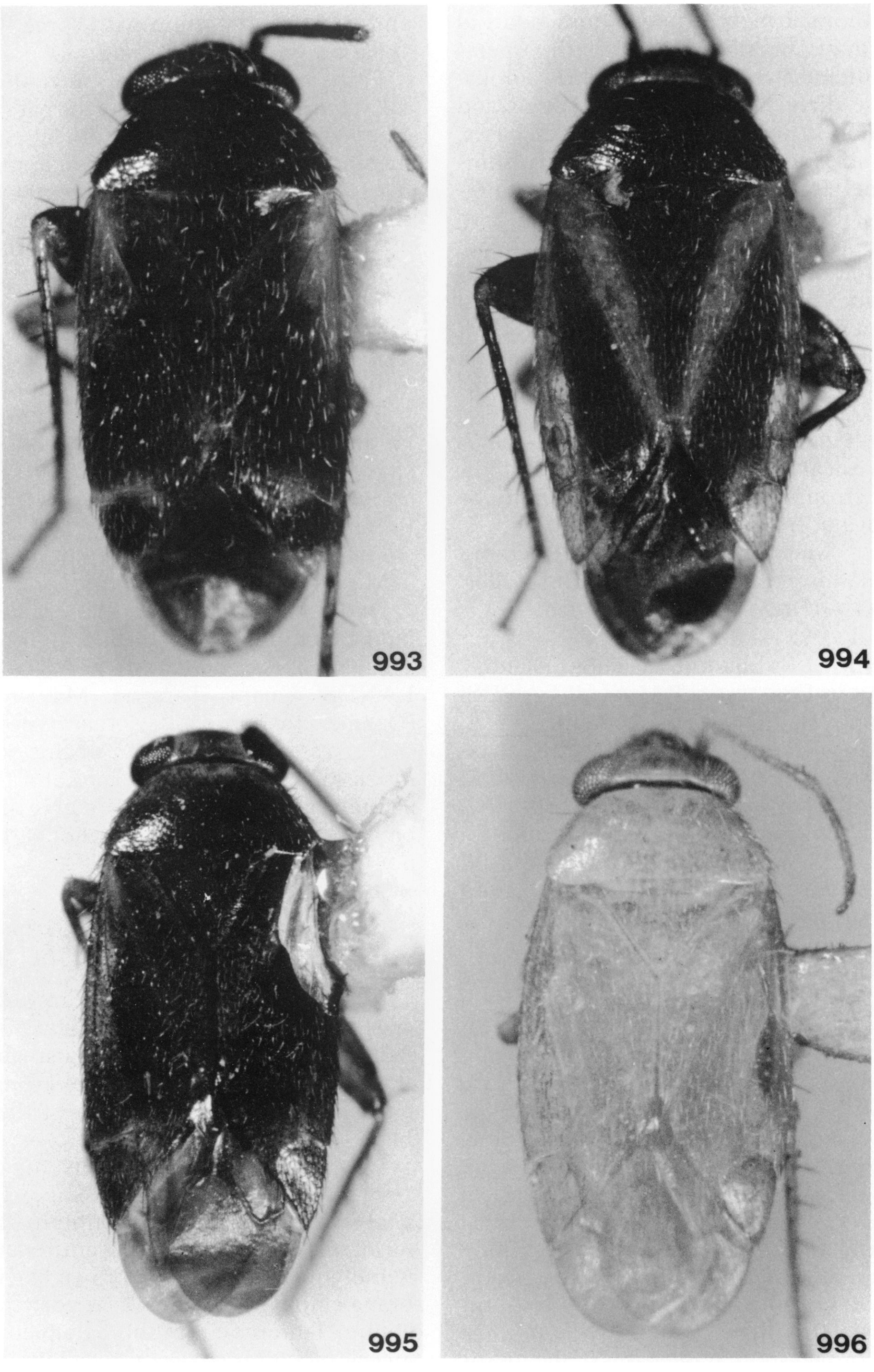
Campylomma palauensis Carvalho

Figures 813, 994, 1005–1007

Campylomma palauensis Carvalho, 1956b, p. 38.

Diagnosis: General appearance similar to *palauana*; distinguished by the mostly light clavus and light exocorium and cuneus, as well as the form of the vesical blades.

Description: Macropterous male. Body elongate, more or less parallel-sided, length apex tylus-cuneal fracture 1.55, width pronotum 0.80; castaneous as follows: head (except posterior margin of vertex), scutellum (except mesoscutum laterally), mesial margin of clavus, endocorium (except along claval suture),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FIGS. 993–996. *Campylomma* spp. 993. *C. palauana,* ♀, paratype. 994. *C. palauensis,* ♀. 995. *C. papuana,* holotype. 996. *C. pallida,* ♂, paratype.

most of thoracic pleuron and abdomen, distal one-third of metafemur, and entire metatibia; antennae black; membrane smoky; otherwise dirty yellow; all tibial spines and metafemoral trichobothria with black bases.

Dorsum smooth, pronotum weakly shining, hemelytra dull; dorsum covered with reclining, golden, common setae.

Anterior margin of head rather evenly rounded in dorsal view; labium not quite attaining apex of metacoxae; spicules on dorsal surface of metafemur black, obscured by dark femoral coloration, in neat row; parempodia setiform, curved, strongly convergent apically.

MALE GENITALIA: Figures 1005–1007. Apical vesical blades relatively short, stout, anterior strongly sinuous, posterior more or less elongate, triangular.

FEMALE: Macropterous. Body form more robust than in male; eyes somewhat smaller.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 813. Palau Islands.

SPECIMENS EXAMINED: PALAU ISLANDS: Babelthaup Island, Imeliik, Netkeng, June 6, 1957 (Sabrowsky; Bishop), 1♀; Babelthaup Island, Ulimang, December 10, 1947 (Dybas; Field), 1♀; Koror Island, November 30, 1947 (Dybas; USNM), 1♂ (holotype); Ngesebus Island, May 29, 1957 (Sabrowsky; Bishop), 1♀; Peleliu Island, east coast, August 1, 1945 (Dybas; Bishop), 1♂.

Campylomma pallida Usinger

Figures 813, 996, 1008–1010

Campylomma pallida Usinger, 1946, p. 89.

DIAGNOSIS: Recognized among those species with a unicolorous light antennal segment two by its almost totally white coloration, the labium reaching beyond the apex of the metacoxae, and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body stocky, somewhat rectangular, length apex tylus-cuneal fracture 1.55, width pronotum 0.63; basic coloration almost white, with a few faint brown spots at the bases of the meso- and meta-femoral trichobothria.

Dorsum smooth, generally weakly shining, hemelytra approaching subhyaline; dorsum covered with reclining golden, common setae and clavus and corium with some flattened, subappressed, shining setae.

Frons bulging and slightly angulate in dorsal view; labium noticeably surpassing apex of metacoxae; spicules on dorsal surface of metafemur brown, in a somewhat undulating row; parempodia setiform, nearly straight, sharply bent and convergent apically.

MALE GENITALIA: Figures 1008–1010. Apical vesical spicules elongate, relatively slender, anterior sinuous, posterior nearly straight, tapered toward apex, base of posterior blade located at point about two-thirds of distance toward apex of anterior blade.

FEMALE: Macropterous. Structurally similar to male, body more nearly elliptical in shape; eyes smaller and vertex relatively wider; antennal segment two more slender than in male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 813. Mariana Islands: Guam and Tinian.

SPECIMENS EXAMINED: MARIANA ISLANDS: Guam, Tarague, May 17, 1936 (Usinger; Bishop), 1♂, 2♀♀ (paratypes).

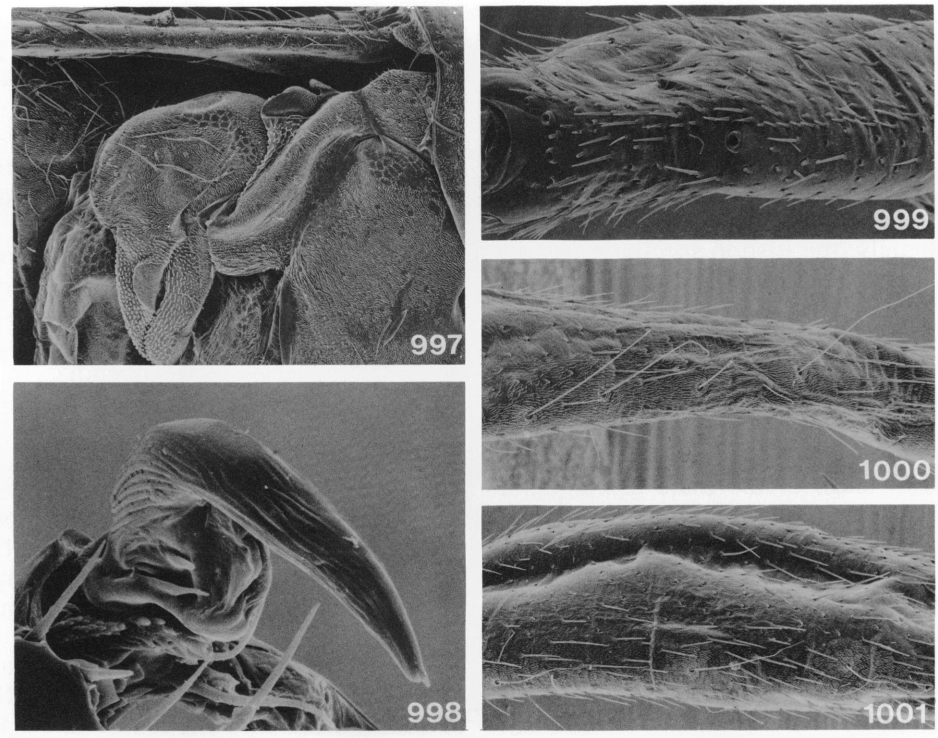
DISCUSSION: The labium of this species is much longer than in *breviceps* and the male genitalia appear to have distinctive difference between the two species, although they are not dramatic.

Campylomma papuana, new species

Figures 810, 995, 997–1001, 1011–1015

DIAGNOSIS: Recognized among those species with an almost totally black or brown black dorsum by the labium just surpassing the apex of the procoxae, the strongly bent and cleft claws, and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body very elongate elliptical, length apex tylus-cuneal fracture 1.91, width pronotum 0.97; posterior one-half of pronotum, entire scutellum, hemelytra, and abdomen brown black; membrane smoky; pronotum anteriorly, head including labium, entire thoracic pleuron, and all legs including coxae dirty yellow; antennae dirty yellow except as follows: distal two-thirds of segment one except apex, segment two except for basal black ring, segment three and four entirely; all tibiae with black spines



FIGS. 997–1001. *Campylomma papuana.* 997. Lateral view of metathorax showing scent-gland evaporatory area. 998. Pretarsus. 999. Dorsodistal view of metafemur showing row of spicules. 1000. Mesofemur showing trichobothria. 1001. Metafemur showing trichobothria.

with at most small black bases; femoral spines and trichobothria with black bases.

Dorsum smooth, head, pronotum, and scutellum shining, hemelytra dull; dorsum covered with reclining, brown, common setae; clavus and corium with flattened, subappressed, shining setae.

Head transverse, frons nearly flat in dorsal view; labium just surpassing apex of procoxae; metathoracic scent-gland evaporatory area as in figure 997; meso- and meta-thoracic trichobothria as in figures 1000 and 1001; spicules on dorsal surface of metafemur brown, in an irregular row, obscured by heavy covering of reclining setae on femora (fig. 999); parempodia setiform, nearly straight; claws strongly bent and cleft basally (fig. 998).

MALE GENITALIA: Figures 1013–1015. Apical vesical blades relatively long, slender, weakly curved, of unequal length.

FEMALE: Macropterous. Body more strongly ovoid than in male, eyes smaller, vertex relatively wider, antennal segment two more slender than in male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Papua New Guinea.

DISTRIBUTION: Figure 810. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Morobe Prov.*: Umboi Island, 1 km. N of Awelkom, 600 m., March 21–28, 1967, G. A. Samuelson collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 5♂♂, 3♀♀. PAPUA NEW GUINEA: *Madang Prov.*: Finisterre Mountains, Damanti, 3550 feet, October 2–11, 1964 (Bacchus; BMNH), 1♂. *Northern Prov.*: Kokoda, March 23–29, 1956, light trap (Gressitt; Bishop), 1♀. [*Prov. unknown*]: Eliptamin Valley, 1665–2530 m., June 23–30, 1959 (Brandt; Bishop), 1♂.

Campylomma ponapensis Carvalho

Campylomma ponapensis Carvalho, 1956b, p. 39.

DIAGNOSIS: See discussion.

DISTRIBUTION: Caroline Islands: Ponape.

DISCUSSION: Two paratype specimens of *ponapensis* were available, one from the Bishop Museum and one from the USNM. Unfortunately, the Bishop specimen has the abdomen and head missing, and all but two legs and one antenna were lost from the USNM specimen. I have chosen not to dissect the holotype male, which is deposited in the National Museum of Natural History, Washington, D.C., because the remaining material is in such sad shape; thus, no accurate knowledge of the male genitalia for this species is available at present. Additional collecting on Ponape would be most helpful.

In Carvalho's (1956b) key, *ponapensis* runs out in the same couplet with the taxon he identified as *lividicornis*. Both "species" have totally light-colored heads and bodies, and a dark ring proximally on antennal segment two; *C. ponapensis* has the first antennal segment almost totally black.

Campylomma rapae, new species

Figures 814, 1016, 1019–1021

DIAGNOSIS: Recognized among those species with a unicolorous light antennal segment two by the generally brown coloration, the absence of brown or black spots on the femora and the form of the vesical blades; also keyed as having a black antennal segment two, as that segment is sometimes more or less uniformly brown.

DESCRIPTION: Macropterous male. Body very elongate elliptical, length apex tylus-cuneal fracture 1.64, width pronotum 0.84; general coloration medium brown; posterior margin of vertex yellowish; antennal segment two, rostrum, all legs (including coxae) except metafemur dirty yellow to light yellow; metafemur medium brown; spines of femora and tibial and femoral trichobothria *without* black bases.

Dorsum smooth, shining, hemelytra subhyaline; dorsum covered with reclining, brown, common setae.

Frons slightly bulging and somewhat angulate in dorsal view; rostrum reaching to apex of metacoxae; spicules on dorsal surface of metafemora black, in a neat row; parempodia somewhat enlarged, curved, flattened and convergent apically.

MALE GENITALIA: Figures 1019–1021. Apical vesical blades similar in form to those of *pallida*, base of posterior blade located far distad of base of anterior blade.

FEMALE: Macropterous. Similar to male, somewhat more robust, eyes smaller, antennal segment two more slender.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality, Rapa Island.

DISTRIBUTION: Figure 814. Rapa Island, French Polynesia.

HOLOTYPE ♂: FRENCH POLYNESIA: *Rapa Island:* Nr. Area, ¼ mile E, July 1, 1934, beating *Hibiscus tiliaceus,* E. C. Zimmerman collector; deposited in B. P. Bishop Museum, Honolulu.

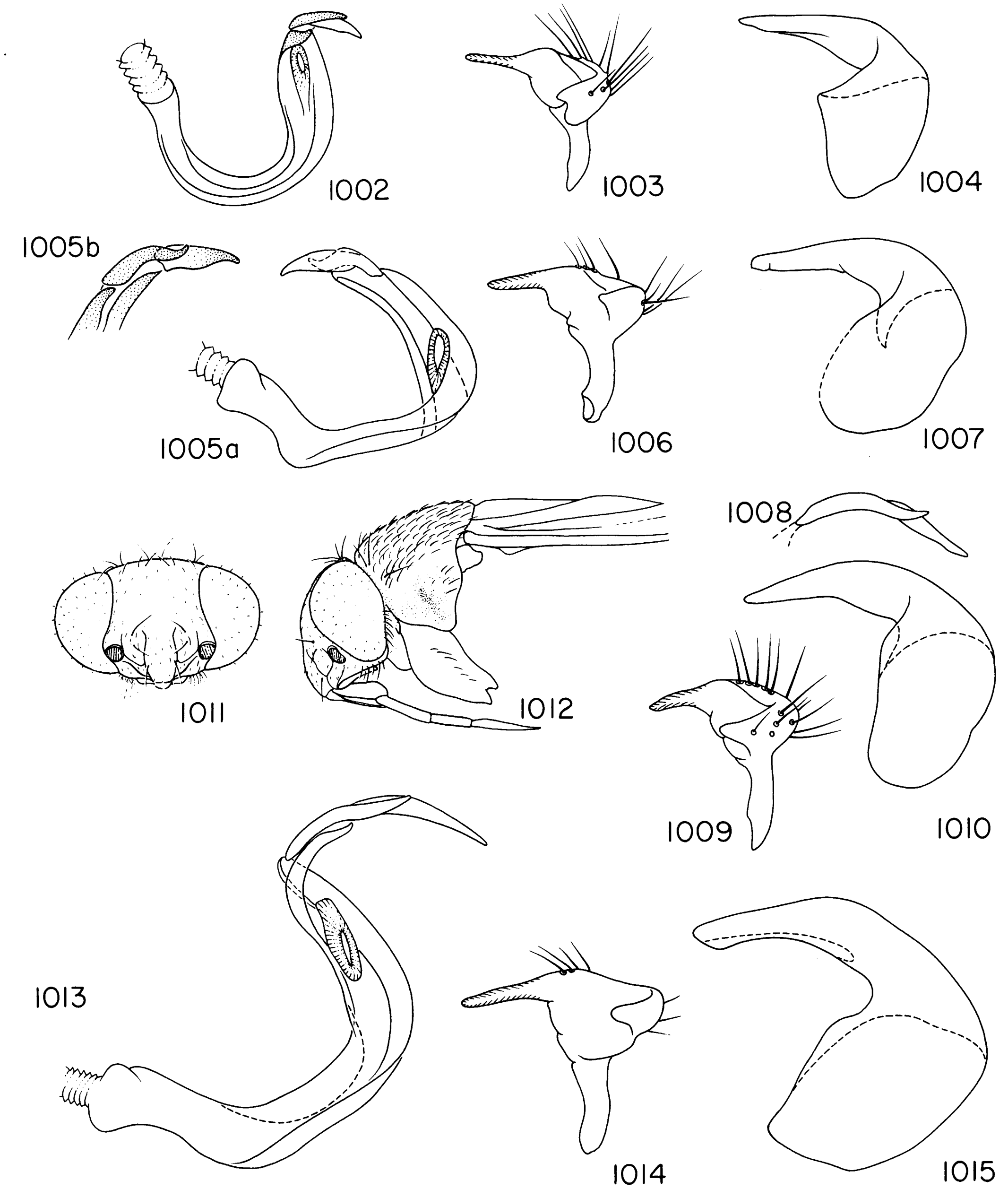
PARATYPES: Same data as holotype (AMNH; Bishop), 17♂♂, 11♀♀. FRENCH POLYNESIA: *Rapa Island:* N area, 10 feet, July 3, 1934, beating *Hibiscus tiliaceus* (Zimmerman; AMNH, Bishop), 19♂♂, 11♀♀.

Campylomma raratongana, new species

Figures 814, 1017, 1022–1024

DIAGNOSIS: Recognized among those species with a totally black second antennal segment by the generally brown dorsum, relatively large size, and the form of the male genitalia. *Campylomma biak* is the only other species in which antennal segment two is noticeably longer than the width of the head and completely black.

DESCRIPTION: Macropterous male. Body elongate, more or less parallel-sided, length apex tylus-cuneal fracture 1.90, width pronotum 0.93; general coloration from light yellow to dark brown; head, anterior lobe of pronotum, most of mesoscutum and scutellum usually dirty yellow or yellow-brown, sometimes much darker; hemelytra with some yellowish areas, particularly cuneus and corium and clavus along claval suture and cuneal fracture; membrane dark smoky brown; all antennal segments dark brown; pro- and meso-legs including coxae, proximal one-third to one-half of metafemur and metatibia

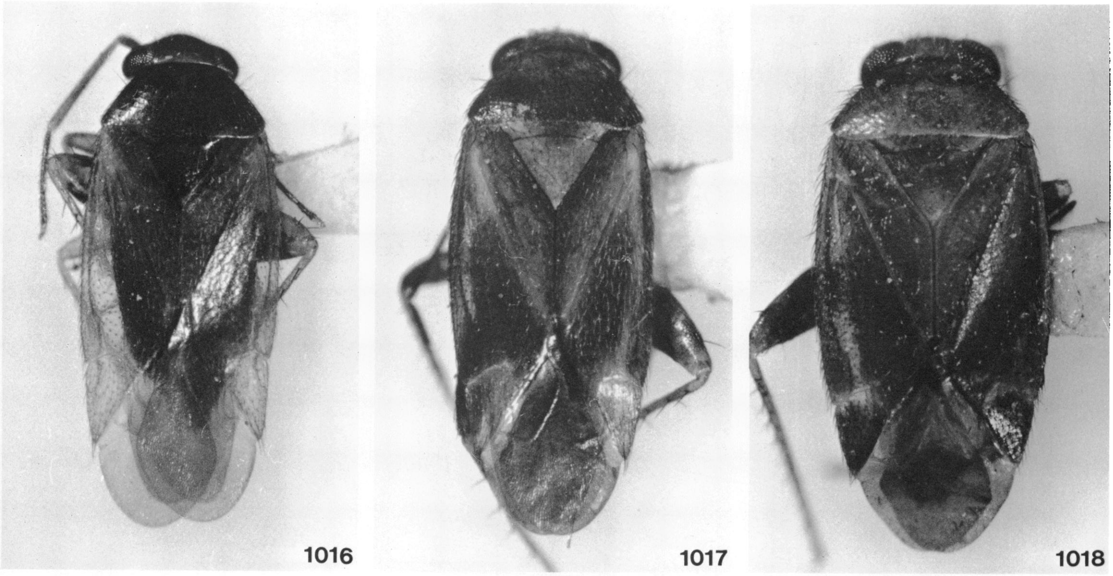


FIGS. 1002–1015. *Campylomma* spp. 1002–1004. *C. palauana.* 1002. Vesica. 1003. Left paramere. 1004. Phallotheca. 1005–1007. *C. palauensis.* 1005a. Vesica. 1005b. Detail of apex of vesica. 1006. Left paramere. 1007. Phallotheca. 1008–1010. *C. pallida.* 1008. Apex of vesica. 1009. Left paramere. 1010. Phallotheca. 1011–1015. *C. papuana.* 1011. Frontal view of head, ♂. 1012. Lateral view of head and prothorax, ♂. 1013. Vesica. 1014. Left paramere. 1015. Phallotheca.

and tarsus light yellow; metafemur only, with black spots; tibial spines without black bases.

Dorsum dull, generally smooth, pronotum very weakly transversely rugulose; entire body covered with pale to dark, reclining, common setae.

Head broad, not rounded in dorsal view; posterior margin of vertex nearly straight and



FIGS. 1016–1018. *Campylomma* spp. 1016. *C. rapae,* holotype. 1017. *C. raratongana,* holotype. 1018. *C. rubrotincta,* holotype.

evenly rounded; antennal segment two one-fourth larger than width of head; rostrum just reaching apex of metacoxae; cuneal incisure obsolete; row of spicules on metafemur entire, somewhat erratic; parempodia weakly fleshy and convergent apically.

MALE GENITALIA: Figures 1022–1024. Vesica strongly curved, twisted, apical spines more or less perpendicular to body of vesica in repose, species elongate, slender, of nearly equal length, smoothly curved, more or less J-shaped; phallotheca L-shaped; left paramere characteristic for genus.

FEMALE: Macropterous. Similar to male except somewhat more ovoid in form and antennal segment two more slender than in male.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on Raratonga Island, Cook Islands.

DISTRIBUTION: Figure 814. Raratonga Island, Cook Islands.

HOLOTYPE ♂: COOK ISLANDS: *Raratonga Island:* Titikaveka, 0–100 m., December 1977, N. L. H. Krauss collector; deposited in the American Museum of Natural History, New York.

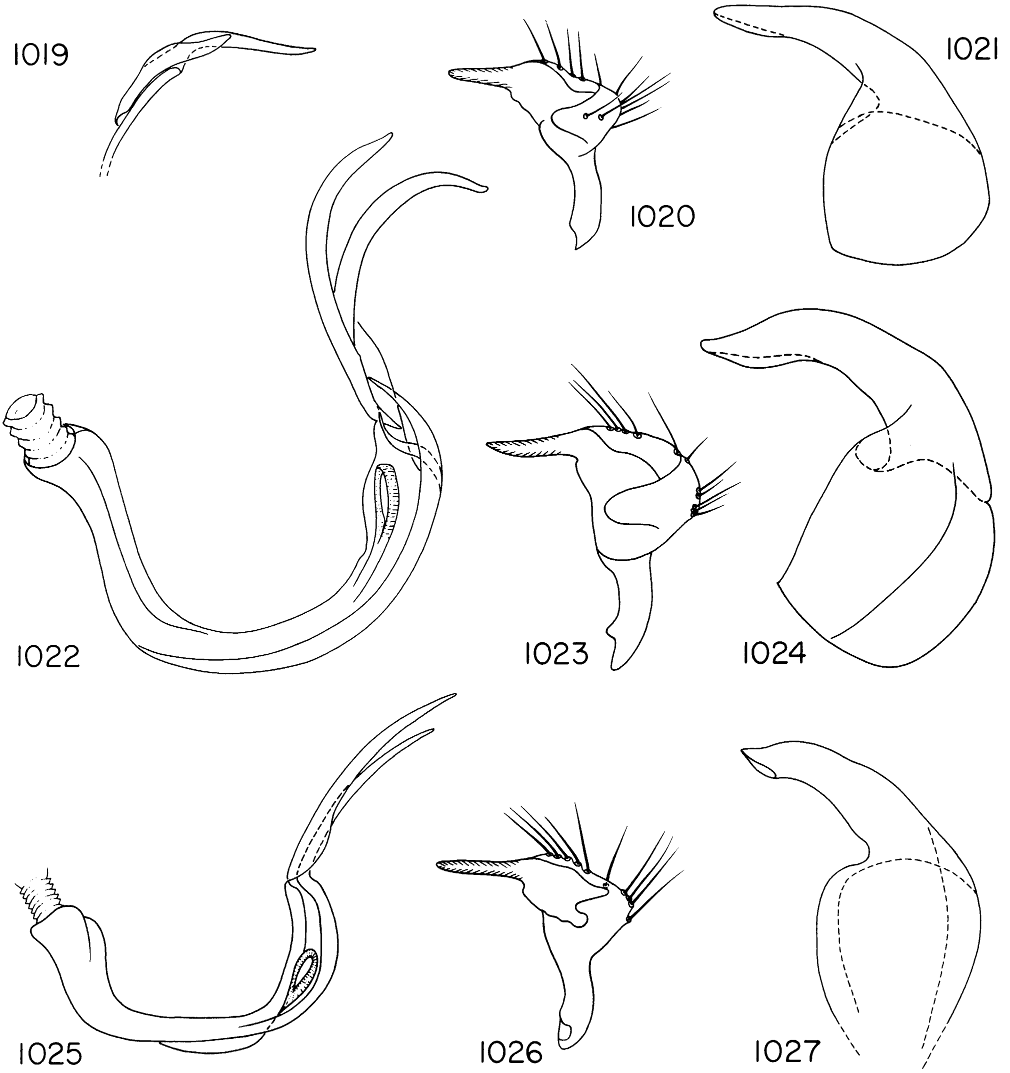
PARATYPES: Same data as holotype, 3♂♂, 3♀♀ (AMNH). COOK ISLANDS: *Raratonga:* Aratiu Valley, 0–150 m., November 197[?] (Krauss; AMNH), 1♂, 4♀♀; Avatiu Valley, 100 m., October 10–18, 1975 (Dugdale; DSIR), 2♀♀; Totokoitu, Research Station, October 2–9, 1975 (Deitz, Dugdale, Watt; DSIR), 4♀♀; December 1939 (Clarke; DSIR), 1♂.

Campylomma rubrotincta Knight
Figures 814, 1018, 1025–1027

Campylomma rubrotincta Knight, 1938b, p. 185.

DIAGNOSIS: Recognized among those species with a unicolorous light second antennal segment by its relatively large size and by the form of the vesical blades; general coloration more strongly dirty orange and reddish than in most other Marquesan species.

DESCRIPTION: Macropterous male. Body elongate, more or less rectangular, length apex tylus-cuneal fracture 1.86, width pronotum 1.01; general coloration medium dirty orange or dirty red; exocorium and cuneus always strongly reddish; antennal segments one and two dirty yellow, segments three and four brown; metafemur, thoracic pleuron, and abdomen more heavily brownish than dorsum; black tibial species with black bases; meso- and meta-femoral trichobothria with brown



FIGS. 1019–1027. *Campylomma* spp. male genitalia. 1019–1021. *C. rapae.* 1019. Apex of vesica. 1020. Left paramere. 1021. Phallotheca. 1022–1024. *C. raratongana.* 1022. Vesica. 1023. Left paramere. 1024. Phallotheca. 1025–1027. *C. rubrotincta.* 1025. Vesica. 1026. Left paramere. 1027. Phallotheca.

bases; metafemora with additional brown spotting.

Dorsum smooth, dull, covered with reclining, brown, common setae, and clavus and corium with a few flattened, subappressed, shining setae.

Head nearly flat across frons and anterior margin of eyes in dorsal view; rostrum not quite reaching apex of metacoxae; spicules on dorsal surface of metafemur black, in a neat row; parempodia enlarged curved, flattened, and convergent apically.

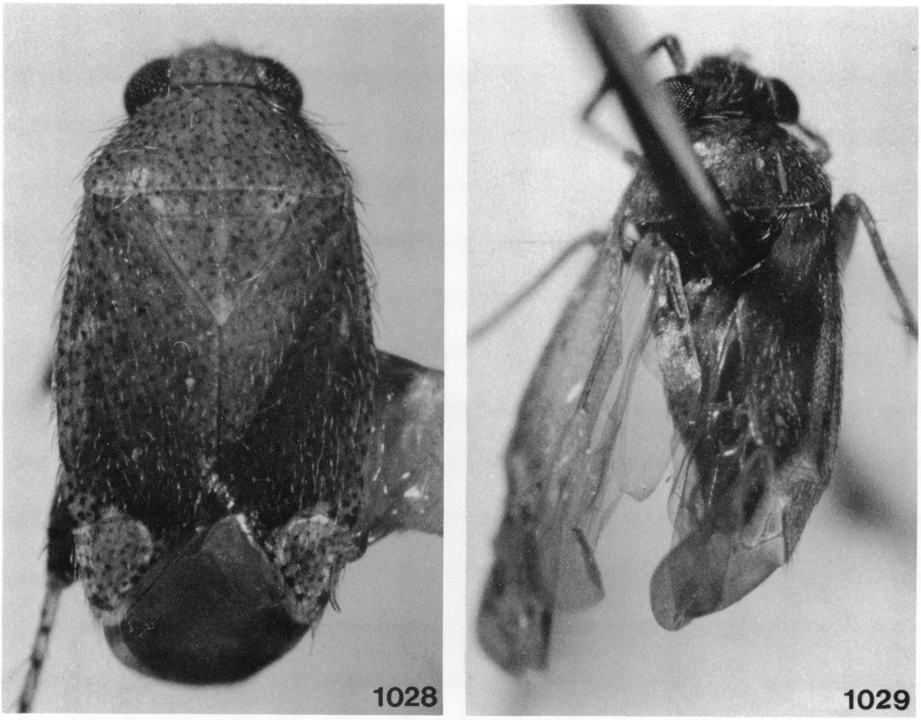
MALE GENITALIA: Figures 1025–1027. Apical vesical blades very long, slender, weakly curved, subequal in length.

FEMALE: Not positively identified.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 814. Marquesas Islands: Nuku Hiva.

SPECIMENS EXAMINED: MARQUESAS IS-



FIGS. 1028, 1029. *Campylomma* spp. 1028. *C. sandaracine*, holotype. 1029. *C. sclephracantha*, holotype.

LANDS: *Nuku Hiva:* Vaiotekea, 2200–3000 feet, August 3–6, 1931, beating on *Metrosideros collina* (LeBronnec and H. Taura; AMNH, Bishop), 5♂♂.

Campylomma sandaracine, new species
Figures 810, 1028, 1030–1032

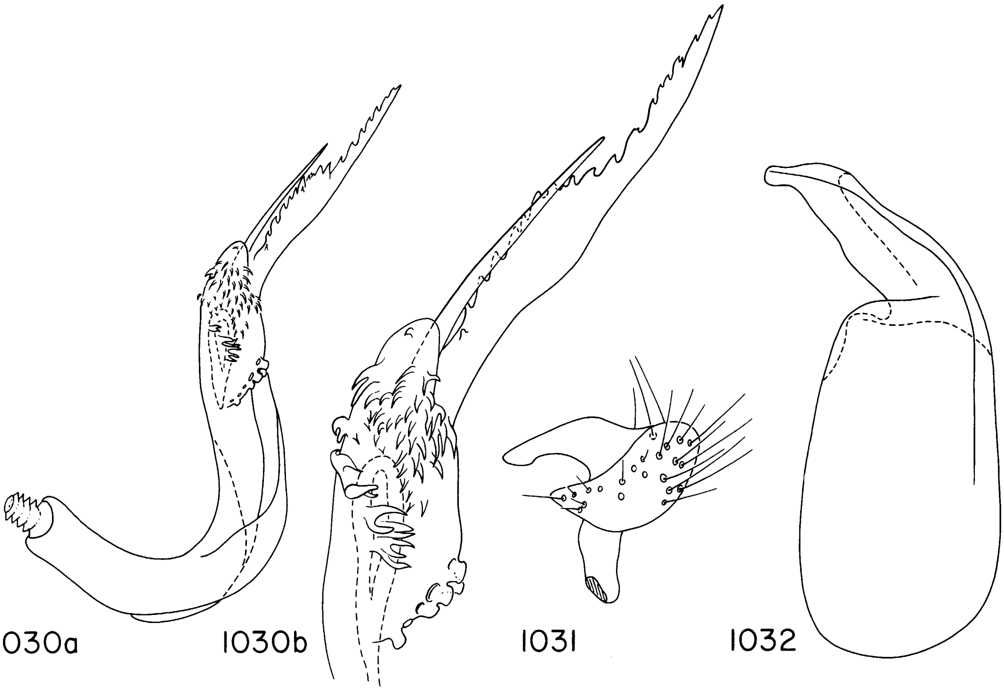
DIAGNOSIS: Recognized by the bright red-orange coloration, including antennal segments one and two, with darker small red-brown spots at the bases of setae on the dorsum, the distinctly ovoid shape, and the structure of the male genitalia, the vesica with retrorse barbs in the area of the secondary gonopore, and conspicuous serrations on the dorsal surface of the longer apical spine. No other known species is colored in this distinctive manner and none have the barbed and toothed characters in the vesica.

DESCRIPTION: Macropterous male. Body form distinctly ovoid, length apex tylus-cuneal fracture 1.79, width pronotum 1.00; general coloration bright red-orange, including appendages which are somewhat paler than body; antennal segments three and four castaneous; body uniformly covered with small red-brown spots at bases of setae; dorsum with some larger bright orange spots; covered with small brown spots distally; all tibiae with red spots at bases of pale spines; cells of membrane orange, remainder of membrane smoky.

Dorsum smooth, dull to very weakly shining; entire body covered with moderately long, reclining, pale setae.

Head appearing rounded in dorsal view; frons somewhat bulging, posterior margin of vertex nearly straight, smoothly rounded; antennal segment two weakly tapered toward base, length about one-tenth greater than width of head; labium reaching to apex of metacoxae; cuneal incisure obsolete; row of spicules on metafemur somewhat erratic and with a few gaps; parempodia setiform.

MALE GENITALIA: Figures 1030–1032. Vesica sigmoid, twisted, secondary gonopore well developed, subtended by several "notches" similar to those found in *Ellenia* spp.,



FIGS. 1030–1032. *Campylomma sandaracine* male genitalia. 1030a. Vesica. 1030b. Detail of apex of vesica. 1031. Left paramere. 1032. Phallotheca.

apical portion of vesica covered with numerous retrorse barbs, apical spines of unequal length, shorter lying dorsal, slender, acuminate, straight, longer relatively broad, of variable width and with erratic serrations along entire dorsal edge; phallotheca weakly bent, basal "skirt" elongate and rectangular; left paramere with a slightly elevated posterior process.

FEMALE: Macropterous. Body form not so elongate as in male, antennal segment two more slender.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Greek *sandaracinos,* orange colored.

DISTRIBUTION: Figure 810. Eastern New Guinea.

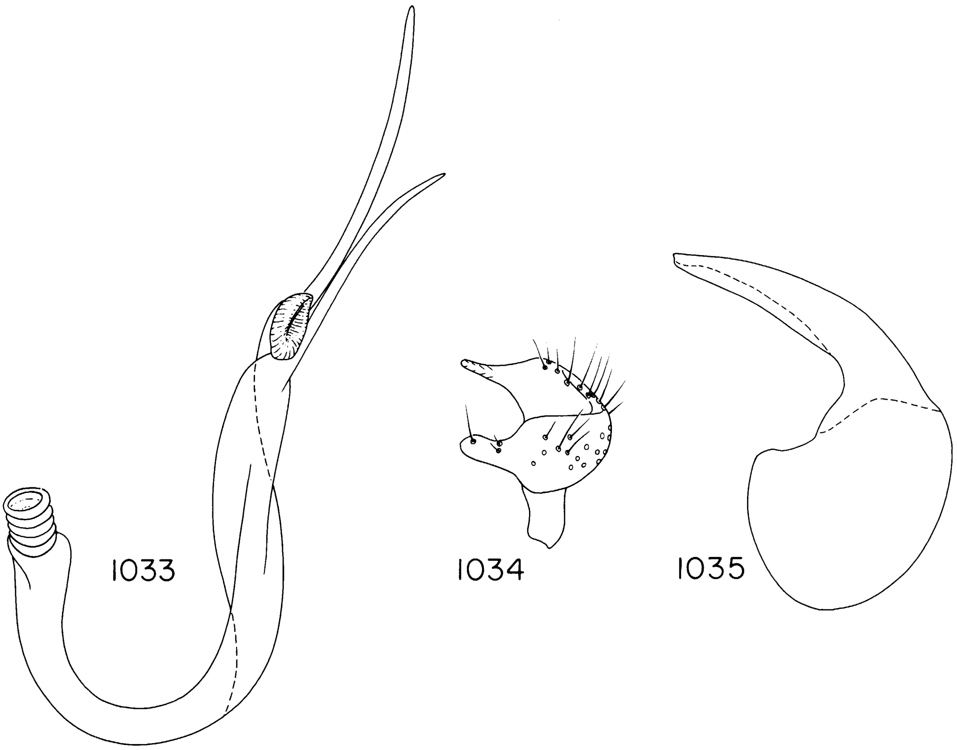
HOLOTYPE ♂: PAPUA NEW GUINEA: [*Prov. unknown*]: Eliptamin Valley, 1665–2530 m., June 19, 1959, W. W. Brandt collector; deposited in B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, 1♀ (Bishop). PAPUA NEW GUINEA: *Milne Bay Prov.:* Rossel Island, Mt. Rossel, 700 m., October 12–20, 1956 (Brass; AMNH), 1♂; Abaleti, SSW of Mt. Rossel, 0–50 m., October 1, 1956 (Brass; AMNH), 1♀. [*Prov. unknown*]: Eliptamin Valley, 1200–1350 m., July 1–15, 1959 (Brandt; Bishop), 1♂; Feramin, 120–150 m., May 23–31, 1959 (Brandt; Bishop), 1♂.

DISCUSSION: The unusual coloration and bizarre vesica of this species make it unlike other members of *Campylomma.* Nonetheless, *sandaracine* does possess the diagnostic characters for the group, and thus its unusual qualities must be treated simply as autapomorphies.

Campylomma sclephracantha,
new species
Figures 810, 1029, 1033–1035

DIAGNOSIS: Recognized by the brown coloration, the poorly defined row of spicules on the metafemur, and the form of the male genitalia, the vesica with two very long, slender, curving, unequal-length apical spines.



FIGS. 1033–1035. *Campylomma sclephracantha* male genitalia. 1033. Vesica. 1034. Left paramere. 1035. Phallotheca.

DESCRIPTION: Macropterous male. Body ovoid, length apex tylus-cuneal fracture unmeasurable (mutilated), width pronotum 0.93; general coloration light to medium brown, cuneus reddish, antennal segment two nearly black on distal one-third; membrane smoky; all femora without spots.

Dorsum smooth, polished and weakly shining; body generally covered with pale, reclining, common setae.

Frons between eyes rounded, clypeus visible in dorsal view; posterior margin of vertex broadly rounded, nearly straight between eyes; antennal segment one as in generic description, segment two of length distinctly greater than width of head, diameter about equal to that of segment one, very slightly tapering toward base; labium reaching to about apex of metacoxae; cuneal incisure shallow but distinct; row of spicules on metafemur incomplete, irregular and difficult to see; parempodia very weakly fleshy, curved, convergent apically.

MALE GENITALIA: Figures 1033–1035. Vesica roughly J-shaped, apical spines long, slender, nearly straight, and of unequal length; distal portion of phallotheca slender; left paramere rather stocky, anterior and posterior processes of about equal length.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

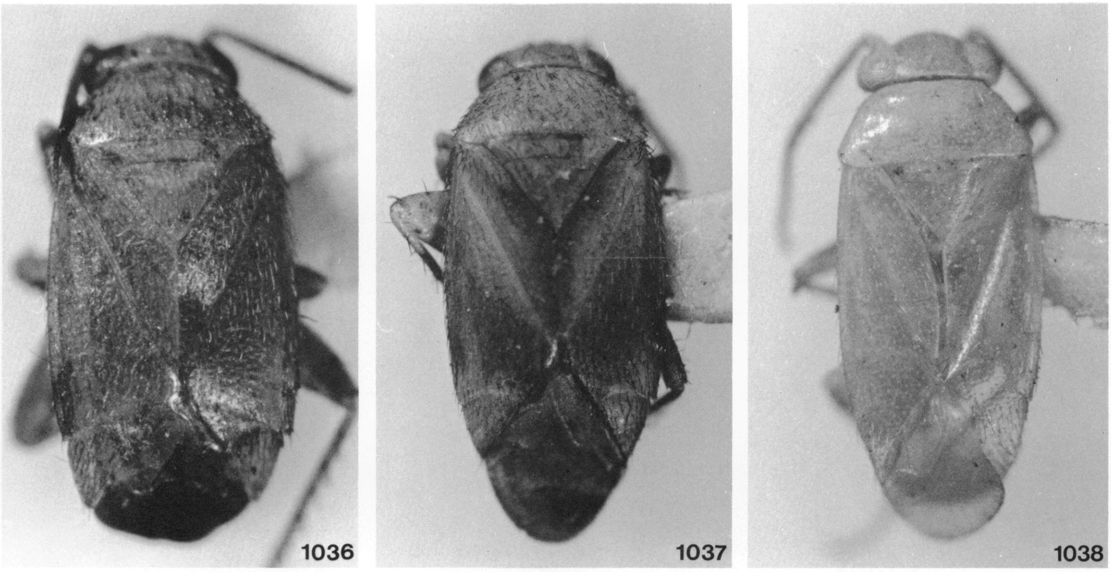
ETYMOLOGY: Named for the long, slender, apical vesical spines; from the Greek *sclephros,* slender, and *acantha,* spine.

DISTRIBUTION: Figure 810. New Caledonia.

HOLOTYPE ♂: NEW CALEDONIA: Pouebo, 20–100 m., February 3, 1964, light trap, R. Straatman collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPE: Same data as holotype, 1♂ (Bishop).

DISCUSSION: *Campylomma sclephracantha* appears to be at most distantly related to the other species of the genus known from New Caledonia. Its somber coloration and indistinctive superficial characteristics make it easily confused with *Paramixia,* for ex-



FIGS. 1036–1038. *Campylomma* spp. 1036. *C. tahitica,* holotype. 1037. *C. tinctipennis,* holotype. 1038. *C. townesi,* holotype.

ample. Its general appearance is not unlike that of *C. malaysiana,* although the latter species has a very "woolly" vestiture by comparison.

Campylomma tahitica Knight
Figures 814, 1036, 1039–1041

Campylomma tahitica Knight, 1938c, p. 191.

DIAGNOSIS: Recognized among those species with a unicolorous light second antennal segment, by the general light orange-yellow coloration, the length of antennal segment two relative to the width of the head, and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body more or less elliptical; length apex tylus-cuneal fracture 1.72, width pronotum 0.81; general coloration light orange-yellow; tibial spines black without black bases; metafemoral trichobothria with brown bases.

Dorsum smooth, shining, hemelytra subhyaline; dorsum covered with reclining, nearly white, common setae.

Frons weakly bulging in dorsal view; rostrum just reaching apex of metacoxae; abdomen broadly joined to thorax; spicules on dorsal surface of metafemur brown, in a somewhat irregular, occasionally interrupted row; parempodia setiform, nearly straight, sharply bent and convergent apically.

MALE GENITALIA: Figures 1039–1041. Vesica large relative to size of body, apical blades relatively stout, of form as in fig. 1039a, b.

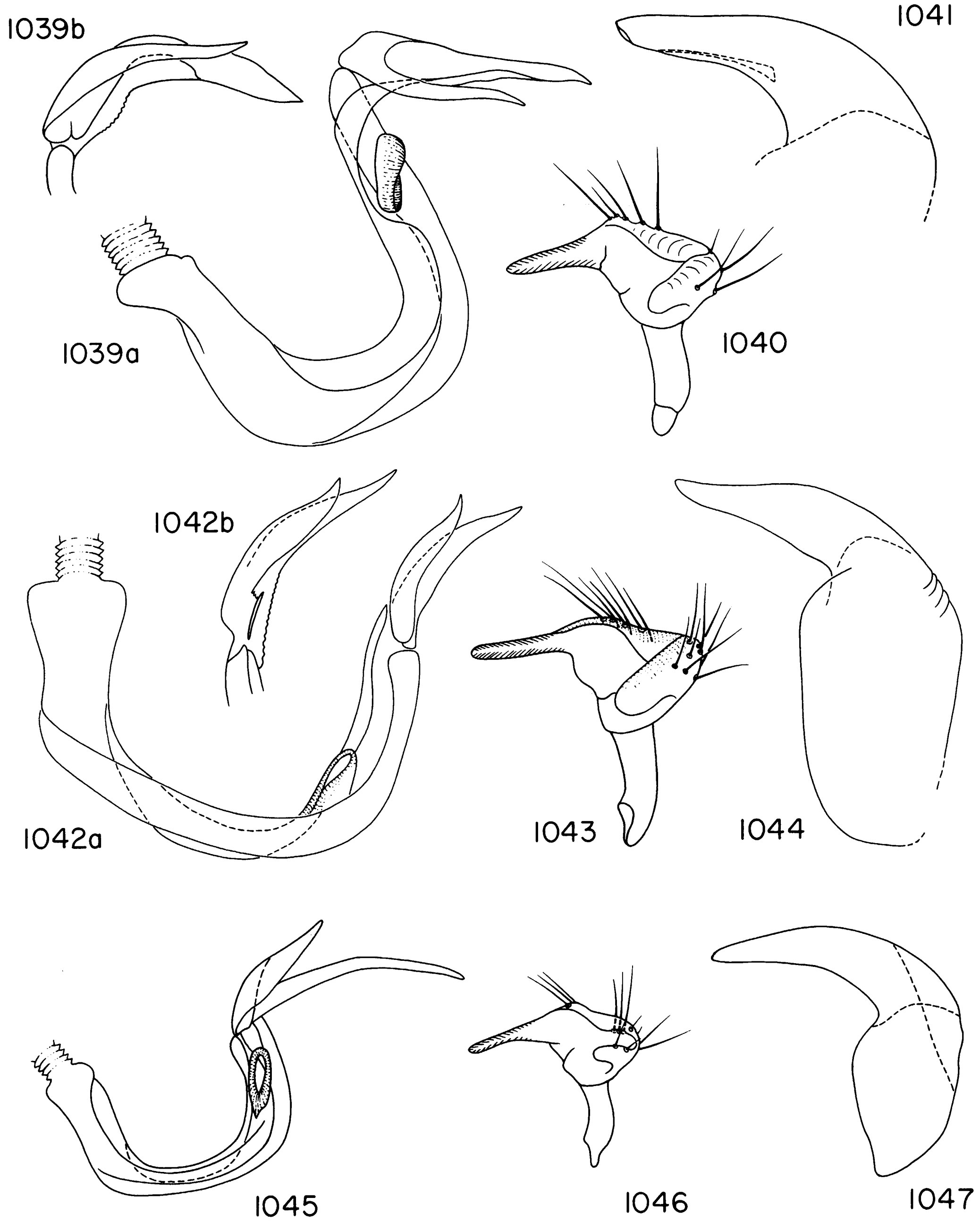
FEMALE: Macropterous. Similar to male, more robust, eyes smaller, antennal segment two more slender.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 814. Society Islands: Huahive, Moorea, Raiatea, Tahiti, Vaitupe.

SPECIMENS EXAMINED: SOCIETY ISLANDS: *Huahive:* Maera, 1–100 m., August 1969 (Krauss; Bishop), 1♂. *Moorea:* Baie de Cook, March 1955 (Krauss; Bishop), 1♀. *Raiatea:* Uturoa, March 1955 (Krauss; AMNH, Bishop), 5♂♂, 3♀♀; Uturoa, 0–100 m., March 1971 (Krauss; Bishop), 1♀. *Tahiti:* Fautaua, near Papeete, 25 m., July 5–11, 1961, malaise trap (Gressitt; Bishop), 1♀; Fautaua Valley, 1500 feet, September 11, 1928 (Adamson; Bishop), 1♂, 1♀; Fautaua Valley, 50 m., 1 mi. from sea, September 7, 1928, ex *Hibiscus tiliaceus* (Adamson; Bishop), 4♀♀; Fautaua Valley, 1500 m., September 11, 1928 (Adamson; Bishop), 1♀; Papeete, September 9, 1928, at light (Adamson; Bish-



FIGS. 1039–1047. *Campylomma* spp. male genitalia. 1039–1041. *C. tahitica.* 1039a. Vesica. 1039b. Alternate view of apex of vesica. 1040. Left paramere. 1041. Phallotheca. 1042–1044. *C. tinctipennis.* 1042a. Vesica. 1042b. Alternate view of apex of vesica. 1043. Left paramere. 1044. Phallotheca. 1045–1047. *C. townesi.* 1045. Vesica. 1046. Left paramere. 1047. Phallotheca.

op), ♂ (holotype); Papeete, March 1965 (Krauss; Bishop), 1♂; Papeete, 1–100 m., August 1969 (Krauss; Bishop), 1♂; Papeete, February 16, 1925 (Wilder; Bishop), 1♂; Papenoo Valley, 150 m., 10 km. from sea, October 25, 1928, ex *Hibiscus tiliaceus* (Adamson; Bish-

op), 1♀; Papenoo Valley, March 1955 (Krauss; Bishop), 1♀. *Vaitupe:* Bora Bora, 0–100 m., March 24, 1971 (Krauss; Bishop), 1♂, 2♀♀.

Campylomma tinctipennis Knight

Figures 814, 1037, 1042–1044

Campylomma tinctipennis Knight, 1938b, p. 183.

DIAGNOSIS: Recognized among those species with a unicolorous light antennal segment two by its relatively large size, long rostrum, and the structure of the vesical blades; among Marquesan species most similar to *hivaoae* and *longirostris* in the form of the vesical apex, and to *hivaoae* and *rubrotincta* in coloration.

DESCRIPTION: Macropterous male. Body elongate elliptical, length apex tylus-cuneal fracture 2.09, width pronotum 1.08; basic coloration, yellow-orange; scutellum, corium, clavus, mesial margin of cuneus, and veins of membrane strongly reddish; area along claval suture often not strongly reddish; antennal segments three and four brown; tibial spines black; bases of femoral trichobothria and metafemoral spines brown.

Dorsum smooth, dull, covered with reclining, brown or black, common setae.

Frons nearly flat in dorsal view; rostrum reaching apex of metacoxae; spicules on dorsal surface of metafemur black, in a neat row; parempodia enlarged, curved, flattened and convergent apically.

MALE GENITALIA: Figures 1042–1044. Apical vesical blades relatively short, stout, both weakly sinuous.

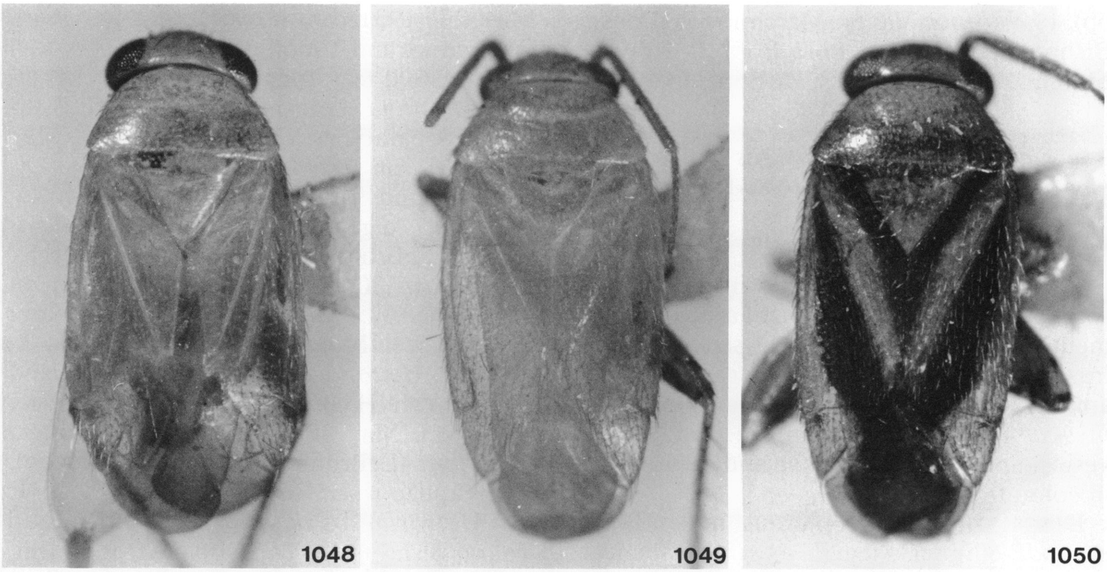
FEMALE: Not positively identified.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 814. Marquesas Islands: Hivaoa, Nuku Hiva, Uapou.

SPECIMENS EXAMINED: MARQUESAS ISLANDS: *Hivaoa:* Tepuna, 3010 feet, August 1, 1929, on *Metrosideros collina* (Mumford and Adamson; Bishop), 1♂. *Nuku Hiva:* Takao Hill, 3020 feet, July 23, 1931, on *Metrosideros collina* (LeBronnec and Taura; Bishop), 7♂♂ (including holotype); Takao Hill, 3020 feet, July 23, 1931, on *Cyathodes tameiamiae* (LeBronnec and Taura; Bishop), 1♂; Takao Hills, 3250 feet, July 23, 1931, on *Weinmannia parviflora* (LeBronnec and Taura; Bishop), 1♂ paratype; Oomu, 3000 feet, May 27, 1931, on *Weinmannia parviflora* (LeBronnec and Taura; AMNH, Bishop), 6♂♂; Oomu, 3000 feet, May 28, 1931, on *Metrosideros collina* (LeBronnec and Taura; Bishop), 7♂♂ paratypes; Oomu, 3200 feet, May 28, 1931, on *Weinmannia parviflora* (LeBronnec and Taura; Bishop) 1♂; Oomaka, 2350 feet, August 15, 1931, on *Metrosideros collina* (LeBronnec and Taura; Bishop) 1♂; Muake, *ca.* 3000 feet, August 3, 1931, on *Metrosideros collina* (LeBronnec and Taura; Bishop) 5♂♂; Muake, 2500 feet, August 3, 1931, on *Metrosideros collina* (LeBronnec and Taura; AMNH, Bishop), 8♂♂; Tapuaooa, *ca.* 2500 feet, May 30, 1931, on *Weinmannia parviflora* (LeBronnec and Taura; Bishop), 2♂♂; Tapuaooa, *ca.* 2750 feet, June 17, 1931, on *Metrosideros collina* (LeBronnec and Taura; Bishop), 1♂; Tapuaooa, *ca.* 3000 feet, June 16, 1931, on *Metrosideros collina* (LeBronnec and Taura; Bishop) 3♂♂; Tapuaooa Hilla, 3500 feet, June 20, 1931, on *Metrosideros collina* (LeBronnec and Taura; Bishop) 1♂; Toovi, 2500 feet, August 4, 1931, on *Metrosideros collina* (LeBronnec and Taura; Bishop), 3♂♂; Tauamka, 2900 feet, November 10, 1929 on *Metrosideros collina* (Mumford and Adamson; Bishop) 1♂; Vaihakameana, *ca.* 2700 feet, June 19, 1931 on *Weinmannia parviflora* (LeBronnec and Taura; Bishop) 3♂♂. *Uapou:* Teoatea, Hakahetau Valley, 1950 feet, November 16, 1931, on *Metrosideros collina* (LeBronnec; AMNH, Bishop), 5♂♂, Teoatea, Hakahetau Valley, 2000 feet, November 19, 1931, on *Metrosideros collina* (Le Bronnec; Bishop), 10♂♂; Teoatea, Hakahetau Valley, 1950 feet, November 20, 1931, at light (LeBronnec; Bishop), 1♂; Teeoata, Hakahetau Valley, 1950 feet, November 21, 1931, on *Metrosideros collina* (LeBronnec; Bishop), 1♂; Teavanui, 2900 feet, November 26, 1931, at light (LeBronnec; Bishop), 1♂.

DISCUSSION: Several specimens originally identified by Knight as *Campylomma fusca* are actually *tinctipennis.* A single male specimen from the Bishop Museum identified by Knight as *tinctipennis* (Marquesas Islands: Nuku Hiva, 3020 feet, July 23, 1931, LeBronnec and Taura) has a vesica which closely resembles that of *marquesana,* although the dorsum is strongly reddish. See also discussion under *longirostris.*



FIGS. 1048–1050. *Campylomma* spp. 1048. *C. ulithiensis*, ♂, paratype. 1049. *C. wakeana*, ♂, paratype. 1050. *C. yapensis*, ♂, paratype.

Campylomma townesi, new species
Figures 814, 1038, 1045–1047

DIAGNOSIS: Recognized among those species with a unicolorous light antennal segment two by the rostrum reaching to the apex of the mesocoxae, and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body more or less parallel-sided, length apex tylus-cuneal fracture 1.50, width pronotum 0.81 basic coloration yellow white; bases of meso- and meta-femoral trichobothria brown.

Dorsum smooth, shining, covered with reclining golden common setae.

Head relatively broad in relation to pronotum, not strongly concave behind, eyes rounded posteriorly and weakly protuberant laterally; vertex broad relative to total width of head, frons rather strongly bulging in dorsal view; rostrum reaching to apex of mesocoxae; spicules on dorsal surface of metafemur black, in an irregular row; parempodia setiform, weakly curved and convergent apically.

MALE GENITALIA: Figures 1045–1047. Anterior apical vesical blade relatively short, broad subbasally, strongly tapering apically; posterior blade much longer, relatively slender slightly bent near middle.

FEMALE: Macropterous. Similar to male, body somewhat more robust.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Henry K. Townes, the collector of the only known specimens.

DISTRIBUTION: Figure 814. Tinian Island, Mariana Islands.

HOLOTYPE ♂: MARIANA ISLANDS: *Tinian Island:* June 9, 1946, abundant on *Cardiospermum haliscabum,* H. K. Townes collector; deposited in National Museum of Natural History, Smithsonian Institution, Washington, D.C. (Type No. 100410).

PARATYPES: Same data as holotype (AMNH, USNM), 9♂♂, 8♀♀. MARIANA ISLANDS: S end of Tinian (Townes; Bishop), 1♂.

Campylomma ulithiensis Carvalho
Figures 814, 1048, 1051–1053

Campylomma ulithiensis Carvalho, 1956b, p. 40.

DIAGNOSIS: Recognized among those species with unicolorous nearly black antennae by its scattered reddish coloration and the form of the vesical blades.

DESCRIPTION: Macropterous male. Body elliptical, length apex tylus-cuneal fracture 1.48, width pronotum 0.78; general coloration dirty yellow, with weak reddish infusion basally on corium and on mesial margins of cuneus at juncture with corium; thoracic pleuron and abdomen suffused with red-brown; tibial and femoral spines dark brown with small brown bases; meso- and metafemoral trichobothria with small brown bases.

Dorsum smooth shining, hemelytra subhyaline; dorsum covered with rather short, reclining, golden, common setae.

Frons weakly convexly rounded in dorsal view; rostrum not quite reaching apex of metacoxae; spicules on dorsal surface of metafemur brown, in an irregular row; parempodia setiform, curved, convergent apically.

MALE GENITALIA: Figures 1051–1053. Apical vesical blades short, stout, anterior strongly sinuous, posterior nearly straight, tapering apically.

FEMALE: Not positively identified.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 814. Caroline Islands, Ulithi Atoll.

SPECIMENS EXAMINED: WESTERN CAROLINE ISLANDS: *Ulithi Atoll:* Falalop Island, April 30, 1952, ex *Cordia* (Beardsley; USNM), 1♂ (holotype), 1♀ (allotype), 5♂♂, 1♀ (Field, Bishop) (paratypes).

Campylomma wakeana, new species

Figures 814, 1049, 1054–1056

DIAGNOSIS: Recognized among those species with a black basal ring on antennal segment two by the yellow-white coloration of the dorsum and the form of the vesical blades. Specimens without visible black basal ring recognized by the structure of the male genitalia.

DESCRIPTION: Macropterous male. Body elongate elliptical, length apex tylus-cuneal fracture 1.64, width pronotum 0.84; basic coloration yellow-white; antennal segment two with a narrow, often faint black basal ring; bases of spines on antennal segment one and meso- and meta-femora black; black tibial spines with small black bases; meso- and meta-femoral trichobothria with conspicuous black bases.

Dorsum smooth, shining, hemelytra subhyaline; dorsum covered with moderately long, reclining, golden setae.

Frons convexly rounded in dorsal view; rostrum nearly reaching apex of metacoxae; spicules on dorsal surface of metafemur brown, in an undulating, irregular row; parempodia setiform, weakly curved, sharply bent and convergent apically.

MALE GENITALIA: Figures 1054–1056. Apical vesical blades relatively long, slender, nearly parallel-sided, posterior blade weakly curved near apex, anterior blade undulating.

FEMALE: Macropterous. Similar to male, body more strongly elliptical, eyes relatively smaller.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on Wake Island.

DISTRIBUTION: Figure 814. Wake Island.

HOLOTYPE ♂: WAKE ATOLL: *Wake Island:* November 1957, N. L. H. Krauss collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 7♂♂, 1♀. WAKE ATOLL: *Peale Island:* July 32, 1923, ex *Sida* (Bryant; Bishop), 10♂♂, 3♀♀; November 1957 (Krauss; Bishop), 1♀. *Wake Island:* July 28–August 2, 1923, ex *Sesuvium* (Bryant; Bishop), 16♂♂, 10♀♀; November 1959, ex *Sida* (Ford; Bishop), 3♂♂, 1♀. *Wilkes Island:* July 27–29, 1923, ex *Portulaca* (Bryant; Bishop), 12♂♂, 5♀♀; November 1957 (Krauss; USNM), 2♀♀.

ADDITIONAL SPECIMENS: WAKE ATOLL: Wake Island, August 1–5, 1937 (FCH; Bishop), 3♂♂, 1♀.

DISCUSSION: Carvalho (1956b) recorded this species as *Campylomma lividicornis*; the male genitalia of the Wake Island specimens, however, are distinct from any specimens known from the Philippines (see discussion under *lividicornis*) and from *marshallensis* Usinger, also treated as *lividicornis* by Carvalho (1956b).

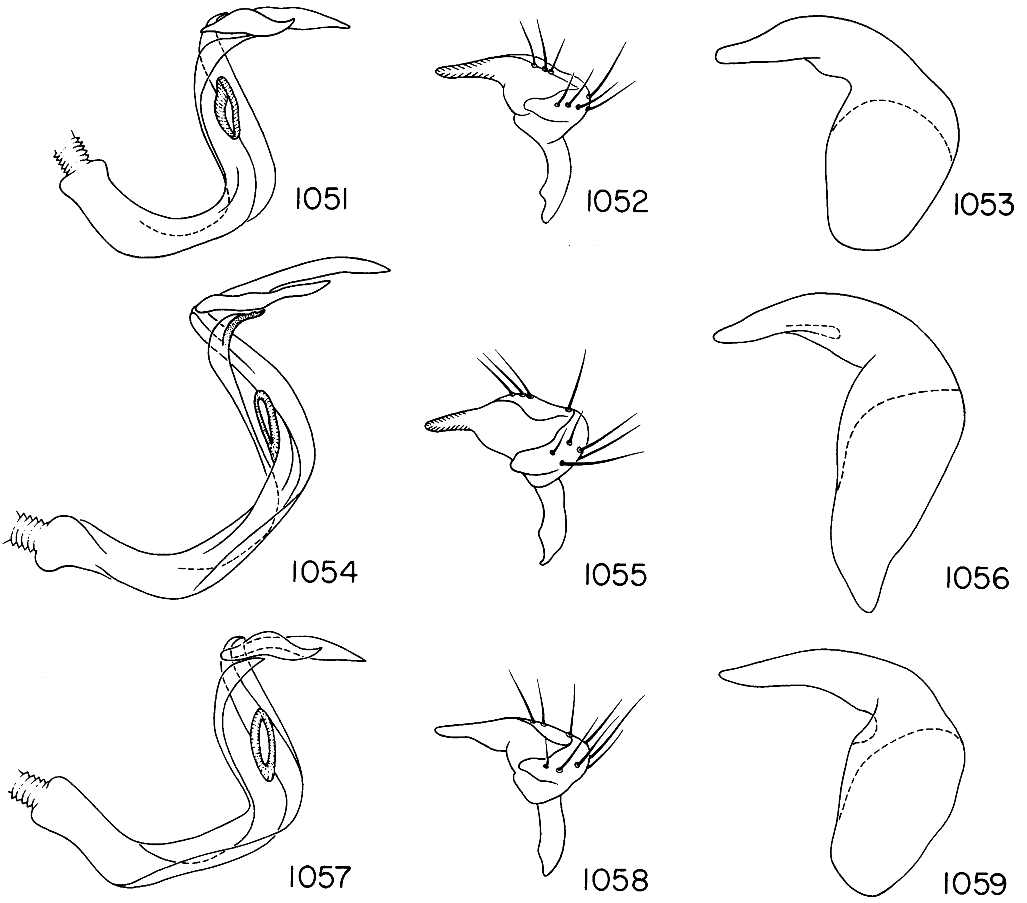
Opuna hawaiiensis Kirkaldy was recorded from Wake Island by Carvalho (1956b). This was a misidentification, apparently the same one made by Bryan and Swezey (1926).

Campylomma yapensis, Carvalho

Figures 814, 1050, 1057–1059

Campylomma yapensis Carvalho, 1956b, p. 40.

DIAGNOSIS: Recognized among those species with a totally black second antennal



FIGS. 1051–1059. *Campylomma* spp. male genitalia. 1051–1053. *C. ulithiensis.* 1051. Vesica. 1052. Left paramere. 1053. Phallotheca. 1054–1056. *C. wakeana.* 1054. Vesica. 1055. Left paramere. 1056. Phallotheca. 1057–1059. *C. yapensis.* 1057. Vesica. 1058. Left paramere. 1059. Phallotheca.

segment by the dark brown inner margin of the clavus and the entire endocorium in contrast with the orange-red coloration of the remainder of the dorsum; the vesical blades are also distinctive.

DESCRIPTION: Macropterous male. Body more or less elliptical, length apex tylus-cuneal fracture 1.56, width pronotum 0.79; basic coloration orange-red, legs, including coxae somewhat lighter than body in general; clavus mesially and entire endocorium dark brown; abdomen castaneous; antennae black; femoral and tibial spines black with black bases; meso- and meta-femoral trichobothria with black bases; metafemora with additional heavy brown spotting.

Dorsum smooth, head, pronotum and scutellum shining, hemelytra dull; dorsum covered with reclining golden or brown, common setae.

Frons and eyes nearly straight across in dorsal view; labium reaching to apex of mesocoxae; spicules on dorsal surface of metafemur in an undulating, somewhat irregular row; parempodia setiform, curved, sharply bent and convergent apically.

MALE GENITALIA: Figures 1057–1059. Apical vesical blades very similar in form to those of *ulithiensis.*

FEMALE: Macropterous. All available specimens mutilated.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 814. Caroline Islands, Yap Island.

SPECIMENS EXAMINED: CAROLINE IS-

LANDS: *Yap Island:* Rul-Ngof-Nif, September 3–7, 1939 (Esaki; Field, Bishop), 6♂♂, 1♀; Dugor-Rumu, 10 m., November 29, 1952 (Gressitt; Bishop, USNM), 2♂♂, 1♀ (including ♂ holotype, USNM); Mt. Matade, 60 m., December 2, 1952 (Gressitt; Bishop), 1♀.

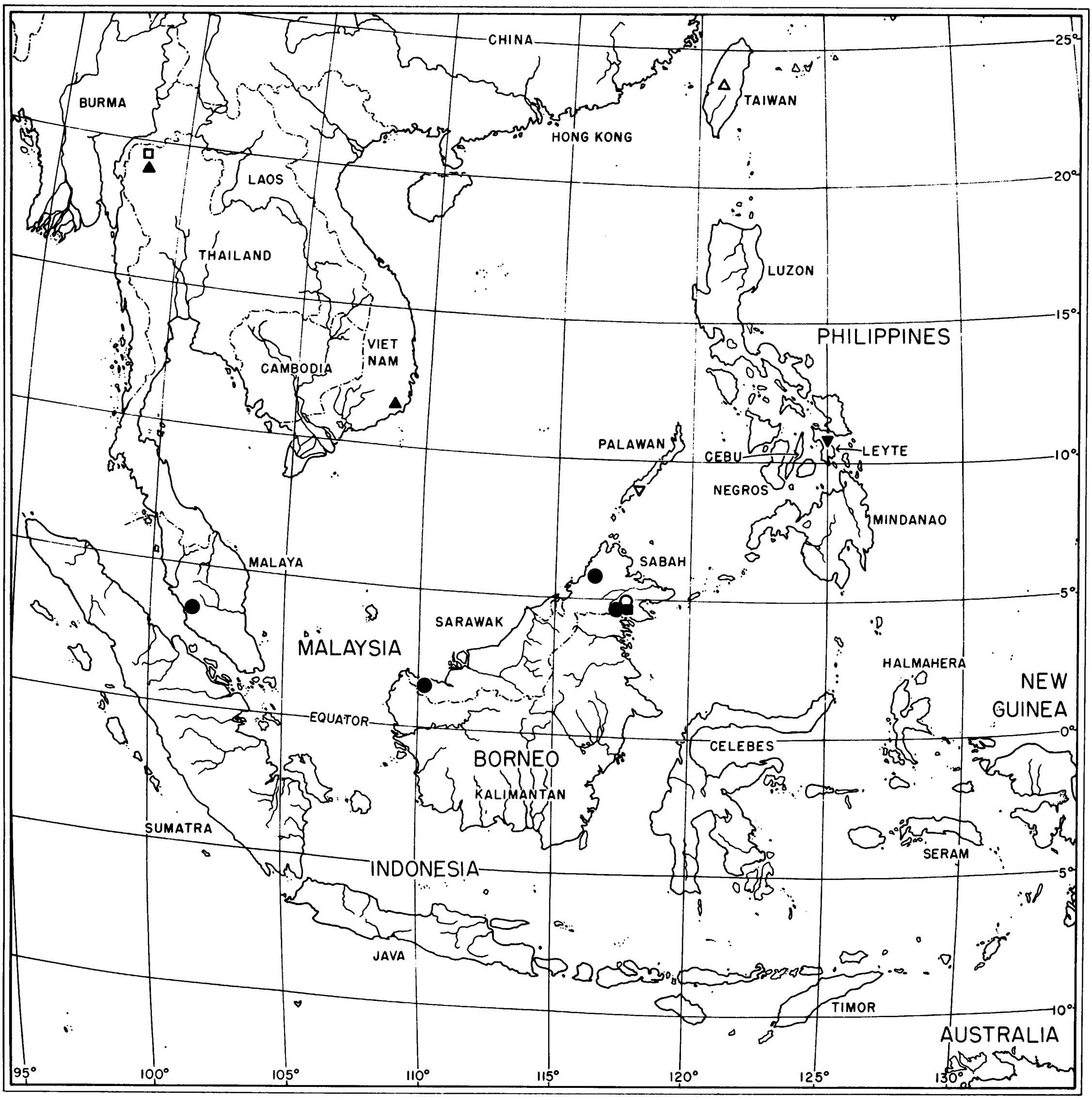
DECOMIA POPPIUS

Decomia Poppius, 1915, p. 73
Torma China, 1927, p. 285. NEW SYNONYMY.

DIAGNOSIS: Recognized by the head being concave behind and evenly convexly rounded across the frons including the eyes (e.g., fig. 1085; but see *gomphocoxa*), the dorsum with a single type of short appressed very neat pubescence (from which the generic name is apparently derived), the apex of the corium and cuneus often each with a dark spot apically on the costal margin (e.g., fig. 1086), the hind femora generally greatly enlarged with a ratio of length to width of approximately 2.70, the length of the second antennal segment less than the width of the head, the claws broadly rounded on the dorsal surface, the inner surface almost completely covered with very large pulvilli (fig. 1066), and the vesica in the form of a J, the vesica usually untwisted, the secondary gonopore well developed and apical (e.g., figs. 1079, 1082) (although in some species it is very poorly developed and possibly absent), the left paramere splayed out, often with characteristic setae rising from a small tubercle (e.g., fig. 1145), and the phallotheca more or less L-shaped and very strongly attenuated apically (e.g., fig. 1144).

DESCRIPTION: Macropterous male. Small to very small, obovate in outline, range length apex tylus-cuneal fracture 1.13–1.96, range width pronotum 0.53–1.18; hemelytra hyaline or subhyaline (very rarely nearly opaque: see *gomphocoxa*), often with distinct markings only at apex of corium and cuneus, sometimes at apex of clavus and on veins of membrane; specimens often light in color, sometimes head, pronotum, and scutellum mostly dark, eyes always nearly black; dorsal surface very smooth, weakly to strongly shining; entire body covered with very neat, short, appressed pubescence, all setae appearing to lie parallel to one another; all antennal segments with short appressed pubescence; anterolateral angles of pronotum without an erect spine; all femora anteapically with a pair of moderately long semierect spines and apically with a pair of shorter reclining spines, meso- and meta-femoral trichobothrial patterns as in figures 1067–1069; all tibiae with scattered semierect spines nearly three times the length of tibial diameter, all tibiae also with several parallel rows of minute spicules over the entire length of the tibia.

Head strongly flattened anteroposteriorly, concave behind, concealing anterior margin of pronotum (fig. 1105), more or less circular in frontal view (e.g., figs. 1121–1130); frons including eyes strongly and evenly convexly rounded as viewed from above (except in *gomphocoxa*); posterior margin of vertex nearly straight and finely carinate (but not elevated); eyes large, occupying nearly entire sides of head, nearly reaching bucculae in some species (figs. 1122, 1131); tylus flattened not visible from above, directed posteroventrally (except in *gomphocoxa*; compare figs. 1101 and 1122); antennae inserted almost on ventral surface of head, anterior margin of eyes moderately emarginate at antennal insertions (figs. 1121, 1130); buccal cavity short, bucculae very narrow, gula present but short, labium reaching approximately to metatrochanters; antennal segment one very short and pedunculate, segment two of length no greater than width of head, usually somewhat narrowed proximally and evenly tapered, segments three and four of lesser diameter than segment two, of about equal length and of combined length slightly greater than that of segment two; pronotum very smooth and evenly convexly rounded, calli not demarcated, lateral margins evenly convex, posterior margin evenly curved across mesoscutum; mesoscutum exposed, demarcated from scutellum by a uniform, finely to rather strongly impressed transverse line, mesoscutum flat to weakly elevated; scutellum nearly flat longitudinally, smoothly and weakly convexly rounded transversely (figs. 1105–1107); cuneal fracture directed anteromesially, cuneal incisure obsolete; veins of membrane smoothly rounded to angulate posteromesially, small cell triangular; metepisternum projecting posteriorly above base of metacoxa, with several posteriorly directed setae marginally; metathoracic scent-gland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CEBU
LEYTE
10°
NEGROS
MINDANAO
MALAYA
SABAH
5°
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
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BORNEO
KALIMANTAN
CELEBES
SUMATRA
SERAM
INDONESIA
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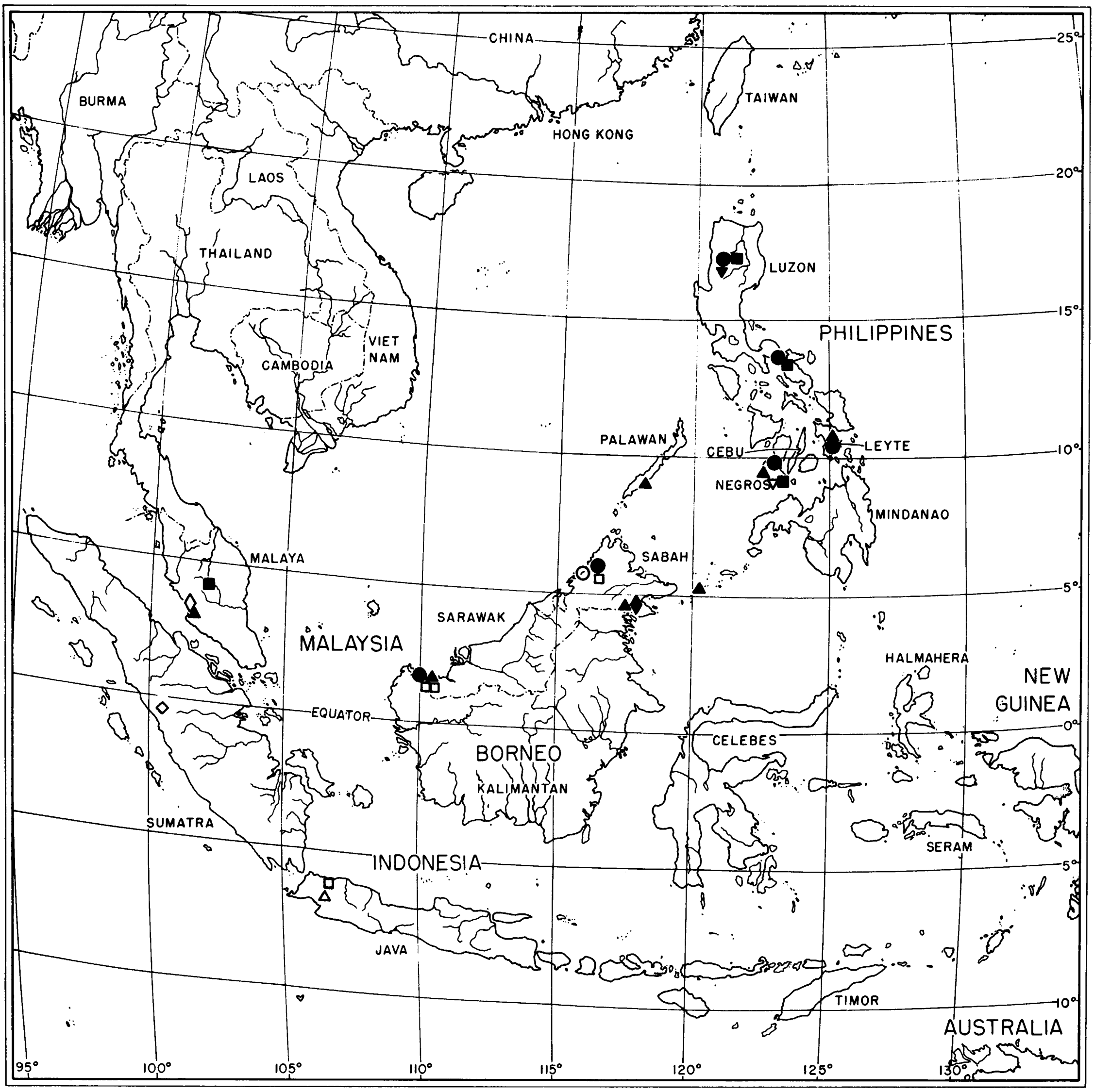
JAVA
TIMOR
10°
AUSTRALIA
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 1060. Distribution of *Decomia* spp. *D. appendix* (▽); *D. cephalotes* (△); *D. chiangdaoensis* (□); *D. dialeptos* (▼); *D. gomphocoxa* (■); *D. indochinensis* (▲); *D. kalabakanensis* (○); *D. malayensis* (●). Also *D. brincki* and *D. srilankensis* from Sri Lanka.

evaporatory area as in figure 1065; all coxae with lateral or lateroventral surfaces weakly to moderately concave, apparently for reception of femora; procoxae usually with neat appressed or semi-appressed setae, very rarely with these setae modified into heavy peglike structure (see *gomphocoxa*; figs. 1096, 1096, 1101); pro- and meso-femora elongate rectangular, metafemora greatly enlarged, ventral surface nearly straight, dorsal surface strongly convexly rounded (except in *terminalis*); all tibiae straight and cylindrical with a group of relatively strong apical spines; pretarsus with setiform parempodia and enlarged flabellate pulvilli on the interior surface of the claws (figs. 1066, 1095).

MALE GENITALIA: Vesica J-shaped, in one plane, not twisted, secondary gonopore usu-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MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
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KALIMANTAN
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SERAM
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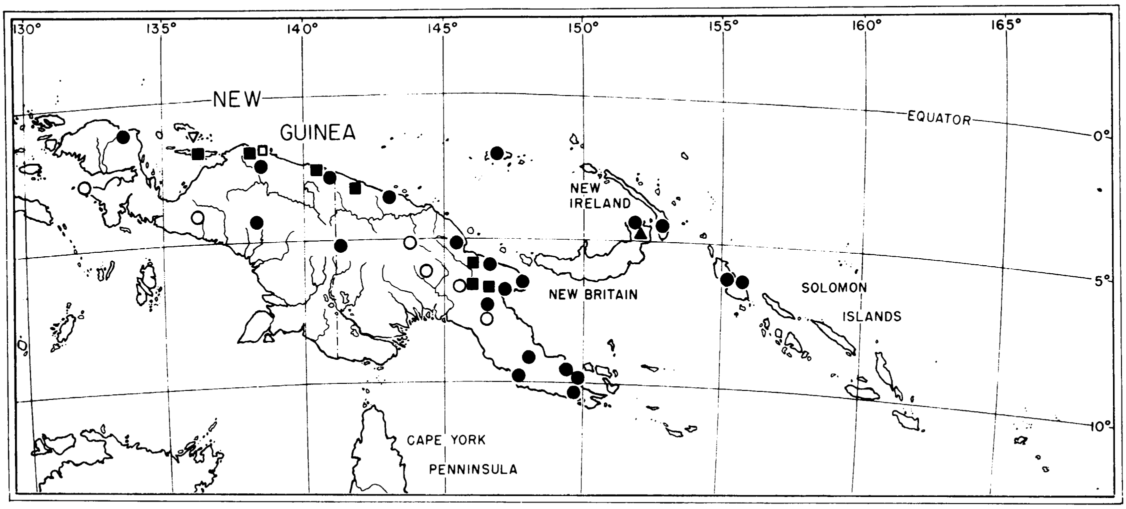
130°

FIG. 1061. Distribution of *Decomia* spp. (continued). *D. microgonoporos* (▲); *D. minuscula* (◆); *D. nigroalba* (▽); *D. parva* (■); *D. pendleburyi* (◇); *D. pisina* (△); *D.* nr. *samoanus* (□); *D. tenompokensis* (●); *D. torrevillasi* (▼); *D. tytthos* (O).

ally well developed (e.g., figs. 1079, 1082; but see *colae* and *microgonoporos*) and subapical (but see *terminalis*) of type apparently characteristic of genus *Decomia*; secondary gonopore not elliptical in outline as in most Phylinae, but folded and directed either to right or to left (but see *appendix*; fig. 1076), vesica usually with terminal membranous elaboration subtended by secondary gonopore, occasionally with terminal appendage (see *appendix*); phallotheca structurally characteristic and uniform for genus *Decomia* with right angle bend and strong apical attenuation (figs. 1080, 1083); left paramere splayed out similar to type found in many Pilophorini (particularly *Ambonea* and related genera), with series of setae on anterior and posterior processes (as viewed from side), those on pos-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CAPE YORK PENNINSULA

FIG. 1062. Distribution of *Decomia* spp. (continued). *D. appendix* (▽); (see also fig. 1060); *D. fuscoscutellata* (□); *D. gressitti* (▲); *D. maai* (■); *D. magna* (○); *D. notata* (●).

terior process often arising from a small peduncle (fig. 1145).

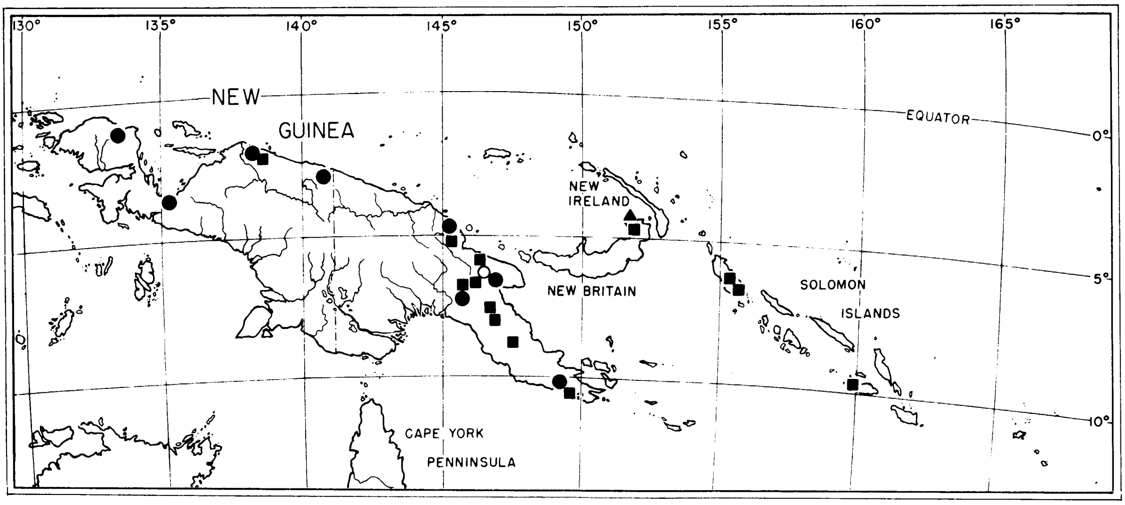
FEMALE: Macropterous. Basic coloration, surface texture, vestiture, and structure as in male.

FEMALE GENITALIA: Posterior wall simple.

TYPE SPECIES: *Decomia cephalotes* Poppius, by monotypy.

DISTRIBUTION: Figures 1060–1064. Old World tropics, from West Africa (although not recorded from tropical East Africa or the Congo Basin), Sri Lanka, and most of South East Asia as far north as Taiwan, south to New Guinea, and Samoa.

DISCUSSION: *Decomia* appears to be a monophyletic group on the basis of the following characters: 1) the extremely large "flabellate" pulvilli attached to the inner and ventral surfaces of the claws, not found in a similar form in any other known phy-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CAPE YORK PENNINSULA

FIG. 1063. Distribution of *Decomia* spp. (continued). *D. papuensis* (■); *D. pedunculata* (○); *D. terminalis* (●); *D. vergrandis* (▲).

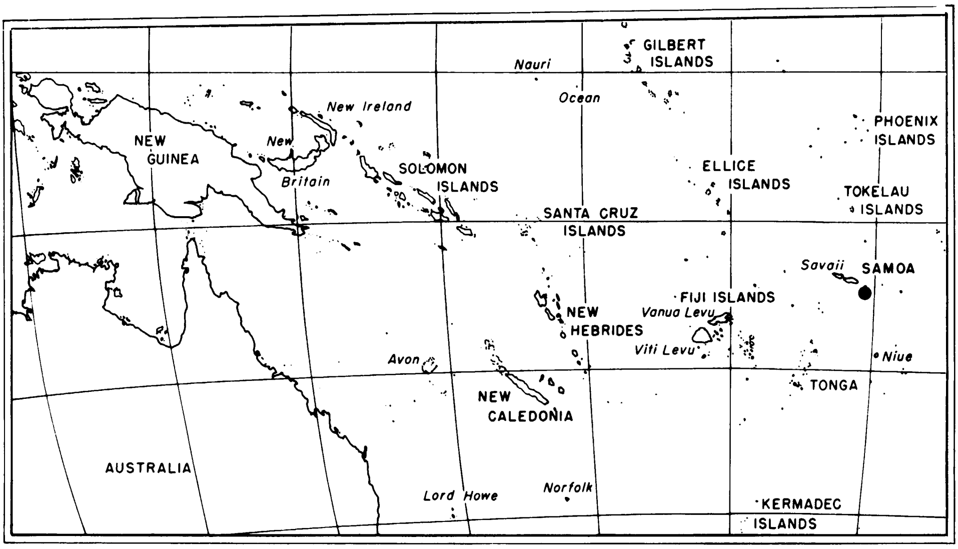
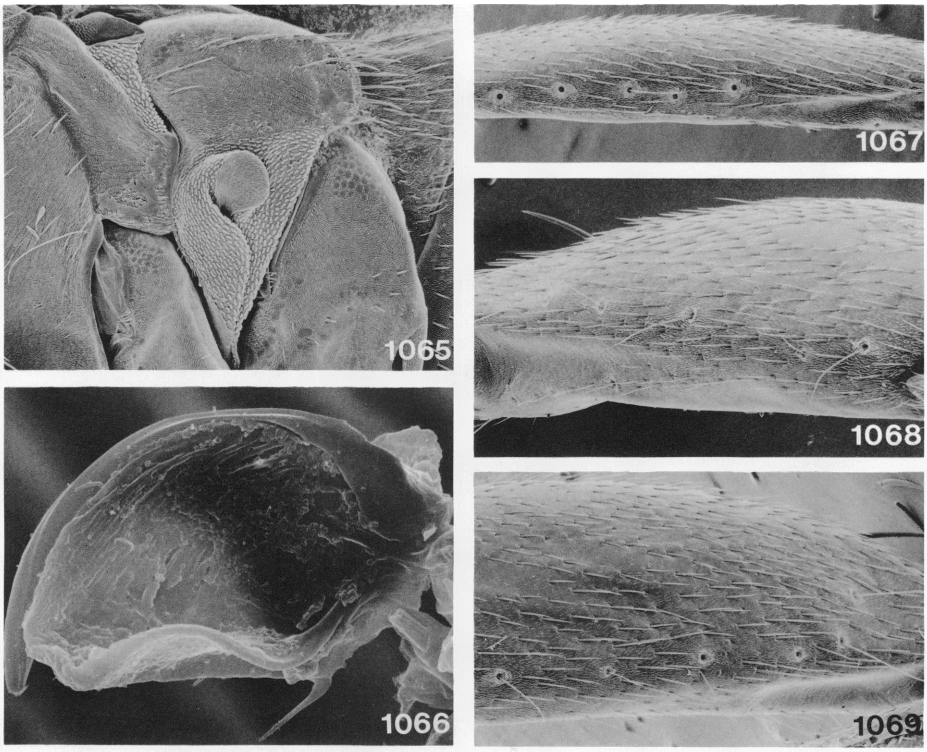


FIG. 1064. Distribution of *Decomia samoanus.*

lines, but reminiscent of the condition found in the Eccritotarsina (Bryocorinae), particularly the genus *Bunsua* Carvalho (see Schuh, 1976, fig. 53); 2) the splayed-out left paramere, which sometimes has the setae on the posterior process tightly grouped together and situated on a small tubercle (the splayed-out paramere is known only in a limited number of other phylines, specifically in *Pseudosthenarus* [not so well developed in its apparent "sister group" *Parapseudosthenarus* Schuh, 1974] and in most pilophorines other than *Paramixia*); 3) the untwisted vesica, with an apical or subapical secondary gonopore which is apparently "folded," and not of the elliptical shape found in most Phylini (and probably greatly reduced in *colae*), a type of gonopore not known to occur in any other group of Phylinae, although the untwisted vesica occurs in phyline genera such as *Pseudosthenarus* and in the Leucophoropterini and Pilophorini; 4) the L-shaped phallotheca, which is strongly attenuated apically, with a bandlike sclerite basally, which is oriented transversely, and which gives the base of the phallotheca a two-part appearance (although many phylines have L-shaped phallothecae that are somewhat attenuated apically, none known to me have the form found almost uniformly in *Decomia* [see *appendix*], and none have the transverse bandlike sclerite basally [see *colae*]); 5) the hemelytra which are usually hyaline and with a neat single type of dorsal pubescence; 6) the contrasting dark markings at the apex of the corium and cuneus, which will separate most species of *Decomia* from the similar appearing *Decomioides.*

China (1927) described *Torma colae.* Comparison of specimens of *colae* with *Decomia cephalotes* Poppius indicates that the *Torma* possesses the defining characters of *Decomia* and thus should be considered a junior synonym by priority, thus creating the new combination *Decomia colae.*

China (1927) compared *Torma* with *Halticus,* probably because they are both small blackish bugs. He noted that the parempodial and antennal structure of *Halticus* was very much unlike *colae,* and that *colae* had claws much like members of the Phylinae. However, because *colae* lacked the hamus in the hind wing he placed *colae* in the Heterotominae (=Orthotylinae) rather than the Phylinae. He went on to suggest that Reuter and Poppius placed too much emphasis on the claw structure in establishing relationships in the Miridae. I have interpreted the setiform parempodia to be plesiomorphic; thus they cannot be used to place *Decomia* in a larger group. However, the absence of the hamus has not been used in mirid classification since



FIGS. 1065–1069. *Decomia* spp. 1065. *D. notata,* lateral view of metathorax. 1066. *D. malaysiensis,* pretarsus. 1067–1069. *D. magna.* 1067. Mesofemur, showing trichobothria. 1068. Metafemur, showing trichobothria. 1069. Metafemur, showing trichobothria.

the time of China's remarks. The structure of the male genitalia, however, can be used to place *Decomia* in the Phylinae. Its relationships within the group are discussed in greater detail below.

Nothing is known of the feeding habits of *Decomia,* except for *Decomia colae* China from Sierra Leone, which was collected on the flowers of *Cola acuminata* (Sterculiaceae). Virtually all of the Oriental material is light-trap collected.

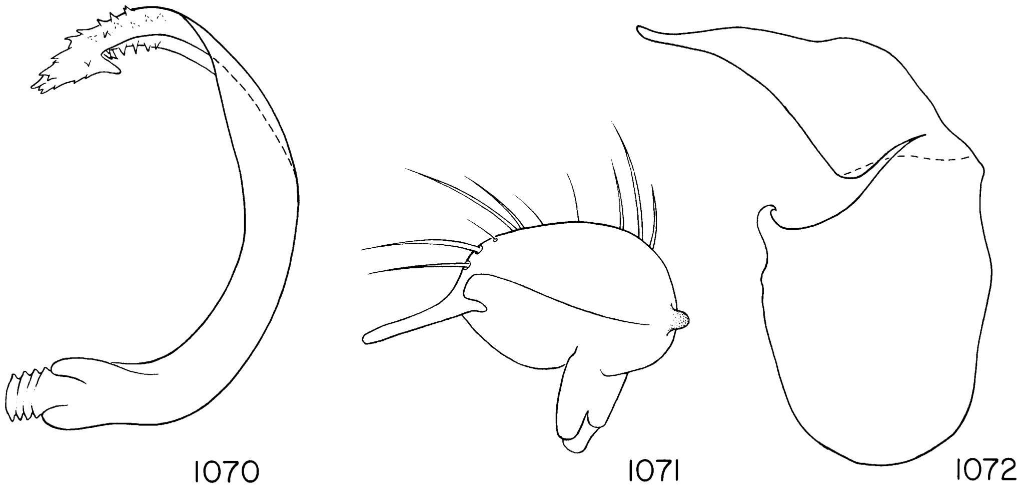
ADDITIONAL SPECIMENS: A single female specimen is available from Papua New Guinea, Madang Prov., Adelbert Mountains (Bishop). Although it resembles *maai* rather closely in general coloration, the cuneus is entirely black. This characteristic is not known to occur in any of the recognized species of *Decomia.*

Four additional female specimens fall into the group of species with the black pronotum and scutellum and at least black meso- and meta-coxae and femora. These are from Papua New Guinea, Morobe Prov. (BMNH), Northern Borneo (Bishop), and Luzon, Philippine Islands (Bishop). Probably three species are involved.

Three female specimens from Northern Borneo (Bishop) closely resemble *magna,* except that the second antennal segment and the pronotum are almost totally black, and the body and appendages are generally suffused with red. A single female specimen from Luzon, Philippine Islands (Bishop), also resembles *magna.* It is strongly suffused with red and has most of the first antennal segment black; the anterior lobe of the pronotum is partially light.

Two female specimens from Fiji (Bishop) probably represent a new species; they appear to be related to *notata.*

A single male specimen from Papua New



FIGS. 1070–1072. *Decomia colae.* 1070. Vesica. 1071. Left paramere. 1072. Phallotheca.

Guinea, Woodlark Island (AMNH), on the basis of the male genitalia, represents a new species probably related to *sumatrana.*

An additional male from Leyte, Philippine Islands (AMNH) represents a new species, probably related to *sumatrana.* Both specimens are in very poor condition and therefore I have not described them.

A large number of small light-colored specimens are available from localities ranging from Sri Lanka through Borneo, New Guinea, and the Philippines. Because of the difficulty involved in recognizing species without the aid of the male genitalia, I have refrained from assigning any of these specimens to described taxa.

KEY TO NON-AFRICAN SPECIES OF *DECOMIA*

1. Coloration uniform grayish brown, hemelytra at most translucent, apex of cuneus and corium without contrasting dark markings (fig. 1094); head directed somewhat anteriorly, tylus visible from above (fig. 1101); procoxae with a field of heavy pegs on lateroventral surface (figs. 1096, 1097, 1101); northern Borneo .... *gomphocoxa*

Coloration variable, hemelytra more or less hyaline, apex of corium and/or cuneus often with more or less strongly contrasting markings; head oriented dorsoventrally, tylus not visible from above; procoxae without field of heavy pegs 2

2. Pronotum totally black or dark brown (head and scutellum often black or dark brown, sometimes head totally light-colored or with light markings, scutellum occasionally with light areas), strongly contrasting with generally hyaline hemelytra 3

Pronotum not toally black or dark brown, with at least some light markings, head and scutellum variable; entire body often yellowish or yellowish suffused with red 11

3. All coxae white; Philippine Islands .... *nigroalba*

Meso- and meta-coxae black or dark brown 4

4. Procoxae white or otherwise light-colored; Java, northern Borneo, and Samoa .... *samoanus* and near *samoanus*

Procoxae black or dark brown 5

5. Pro- and meso-femora white, or otherwise light-colored and contrasting with coxae; Thailand .... *chiangdaoensis*

Pro- and meso-femora dark, unicolorous with coxae 6

6. Antennal segment two totally white; head light, contrasting with dark pronotum and scutellum (fig. 1074); Sri Lanka ..... *brincki*

Antennal segment two black at least on distal one-third; head, pronotum and scutellum generally dark and not contrasting with one another (e.g., fig. 1105) 7

7. Antennal segment two totally black; New Guinea .... *maai*

Antennal segment two black on no more than distal one-half 8

8. Antennal segment two black on distal one-half; profemora black proximally, light distally; setae on posterior process of left paramere not arising from tubercle 9

Antennal segment two black on distal one-third; profemora entirely black 10

9. Vesica with small apical secondary gonopore and with no apical membranous elaborations (fig. 1108); New Britain .... *gressitti*

Vesica with large apical secondary gonopore and with large membanous elaborations (fig. 1082); Taiwan .... *cephalotes*

10. Antennal segments three and four light; especially hemelytral markings with a reddish suffusion; Malaya .... *pendleburyi*

Antennal segments three and four black; hemelytral markings black, with reddish suffusion; Philippine Islands ...... *torrevillasi*

11. Apex of clavus without dark marking contrasting with remainder of clavus (fig. 1150); body usually more or less unicolorous (but see *microgonoporos*) and with some orange or reddish suffusion, especially associated with markings at apex of corium and cuneus (but see *appendix*); genital capsule in male usually light (but see *indochinensis*) 12

Apex of clavus with small dark marking contrasting with remainder of clavus (fig. 1119); body and appendages sometimes with reddish suffusion, differing from conspicuously dark brown or black markings at apex of corium and cuneus 19

12. Antennal segment two light, unicolorous, at most darkened on extreme distal portion 13

Antennal segment two black on distal one-third or distal one-half 16

13. Length of apex tylus to cuneal fracture in male greater than 1.50; male genitalia typical of genus *Decomia* with well-developed secondary gonopore and splayed out left paramere 14

Length of apex tylus to cuneal fracture in males less than 1.30; male genitalia atypical for *Decomia*, either with poorly developed secondary gonopore or vesica with sclerotized apical process and left paramere strongly splayed-out 15

14. Marking at apex of corium obsolete, weakly orangish (fig. 1150); marking at apex of cuneus small, dark brown; male genitalia as in figures 1164 and 1165; New Guinea, Bismarck Archipelago, Solomon Islands .... *papuensis*

Marking at apex of corium and cuneus of moderate width, red-orange (fig. 1177); male genitalia as in figures 1187–1189; Sri Lanka .... *srilankensis*

15. Marking at apex of corium broad, black (fig. 1137); distal one-half of metafemur strongly suffused with red; male genitalia with poorly developed secondary gonopore (fig. 1140); Malay Peninsula, northern Borneo, Philippine Islands ...... *microgonoporos*

No marking at apex of corium (fig. 1073); metafemur with black marking on extreme distal portion; vesica with well-developed apical sclerotized process (fig. 1076); Philippine Islands, western New Guinea .... *appendix*

16. Markings on apex of corium and cuneus narrow (stripelike), not particularly conspicuous and not strongly contrasting with remainder of hemelytron 17

Markings at apex of corium and cuneus broad, red, and conspicuous, although not necessarily in strong contrast with coloration of entire hemelytron (fig. 1106); male genitalia as in figures 1114–1117; entire genital segment of male dark brown; Thailand, Viet Nam .... *indochinensis*

17. Distal one-third of antennal segment two black; male genitalia as in figures 1196–1198; northern Borneo, Philippine Islands .... *tenompokensis*

Distal one-half of antennal segment two black 18

18. Distance from apex tylus to cuneal fracture in males approximately 1.75; male genitalia as in figures 1134–1136; Malay Peninsula, northern Borneo .... *malayensis*

Distance from apex tylus to cuneal fracture in males approximately 1.35; male genitalia as in figures 1111–1113; northern Borneo .. .. *kalabakanensis*

19. Scutellum totally dark brown; mesoscutum unicolorous with scutellum except laterally; large species, length apex tylus-cuneal fracture in males 1.70 or greater 20

Scutellum sometimes with brown markings but never totally brown, usually unicolorous yellow or yellow-orange, smaller species, length apex tylus-cuneal fracture under 1.70 21

20. Vertex and posterior lobe of pronotum dark brown (fig. 1119); male genitalia as in figures 1127–1129 .... *magna*

Head entirely light, posterior lobe of pronotum darkened only across mesoscutum (fig. 1087); male genitalia as in figures 1098 and 1099; western New Guinea .... *fuscoscutellata*

21. Vesica short, relatively stocky, without mem-

branous or sclerotized elaborations distal to the gonopore; gonopore opening distally; phallotheca strongly hump-backed and with very narrow elongated distal portion (figs. 1203); New Guinea .... *terminalis*

Vesica more elongate with subapical gonopore, always with at least some membranous and/or partly sclerotized terminal elaborations; phallotheca without strong "hump" on dorsal surface, apex slender although not so strongly attenuated as in *terminalis* 22

22. Scutellum nearly always with some brown, contrasting, more or less longitudinal markings (fig. 1149); intensity of coloration somewhat variable; male genitalia as in figures 1152–1157, membranous terminal elaboration of vesica with a serrate edge, setae of posterior process of left paramere arising from a tubercular process; New Guinea, Bismarck Archipelago, Solomon Islands .... *notata*

Scutellum unicolorous; usually yellow-orange or light yellowish; male genitalia variable 23

23. Vesica elongate, slender, secondary gonopore subapical, with limited terminal elaboration; gonoporal opening directed to right, body of phallotheca noticeably elongate, more or less parallel-sided, setae on posterior process of left paramere arising from small tubercle (figs. 1178–1180); coloration of body yellow-white (fig. 1163); Bismarck Archipelago .... *perparvula*

Male genitalia not as above, vesica with more extensive terminal elaboration; setae of posterior process of left paramere arising or not from a tubercle; coloration variable, often yellowish 24

24. Terminal membranous elaboration of vesica directed to the right and sometimes upward (when vesica oriented as in accompanying figures) 25

Terminal membranous elaboration of vesica oriented to the left 27

25. Setae of posterior process of left paramere arising from very small tubercles (fig. 1213); vesica as in figure 1212; northern Borneo .... *tytthos*

Setae of posterior process of left paramere arising from distinct tubercle elevated noticeably above body of paramere (fig. 1093); vesica not as above 26

26. Vesica rather strongly curved basally (fig. 1091); left paramere as in figure 1093; Philippine Islands .... *dialeptos*

Vesica without strong basal curvature (fig. 1166); tubercle of left paramere conspicuously elevated as in figure 1168; Philippine Islands .... *parva*

27. Setae on posterior process of left paramere situated on a very elongate stalklike process (fig. 1171); vesica long and slender, strongly curving (fig. 1169); eastern New Guinea .... *pedunculata*

Setae on posterior process of left paramere if situated on a process, then process always much shorter than in *pedunculata*; vesica variable 28

28. All setae on posterior process of left paramere situated on distinct tubercular process 29

Setae on posterior process of left paramere at most in part situated on small peduncle 30

29. Left paramere and vesica as in figures 1143 and 1145; northern Borneo ... *minuscula*

Vesica and left paramere as in figures 1193 and 1195; Sumatra .... *sumatrana*

30. Vesica and left paramere as in figures 1181 and 1183; Java .... *pisina*

Vesica and left paramere as in figures 1214 and 1216; New Britain ...... *vergrandis*

Decomia appendix, new species

Figures 1060, 1062, 1073, 1076–1078

DIAGNOSIS: Member of a group of small light-colored species which lack a strong dark marking at the apex of the corium and have no dark marking at the apex of the clavus (fig. 1073). Recognized by the structure of the male genitalia, particularly the terminal spicule on the vesica (fig. 1076).

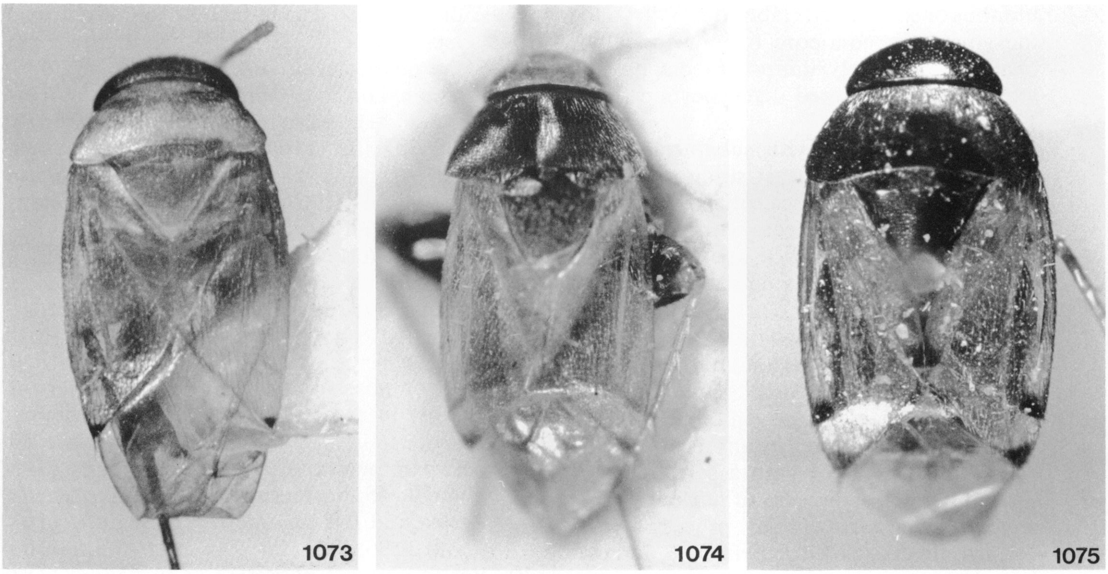
DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.22, width pronotum 0.74; basic coloration dirty yellow with the following exceptions: extreme apex of cuneus, apex of labium, and extreme distal portion of metafemora at tibiofemoral articulation black.

Basic structure, surface texture, and vestiture as in generic description; metafemora conspicuously enlarged.

MALE GENITALIA: Figures 1076–1078. Vesica with sclerotized terminal spiculum; left paramere less strongly splayed out than in other species of *Decomia,* numerous setae on posterior process, not arising from tubercle. FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the spicule-like terminal process on the vesica; from the Latin noun *appendix,* a process or appendage.



FIGS. 1073–1075. *Decomia* spp. 1073. *D. appendix*, holotype. 1074. *D. brincki*, holotype. 1075. *D. cephalotes*, holotype.

DISTRIBUTION: Figures 1060 and 1062. Philippine Islands and western New Guinea.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Palawan:* Brookes Point, Uring Uring, August 14, 1961, MV light, 1900–2100 hours, collected by Noona Dan Expedition; deposited in University Zoological Museum, Copenhagen.

PARATYPE: INDONESIA: *West Irian:* Biak Island, October 14, 1957, light trap at end of airstrip (Gressitt; Bishop), 1♂.

DISCUSSION: This species can be positively recognized only by dissection of the male genitalia. Although the two known light-trap collected specimens are from widely separated localities, the male genitalia, as well as other characteristics, appear to be nearly identical.

Decomia brincki, new species

Figures 1074, 1079–1081

DIAGNOSIS: Member of a group of species with dark brown to black pronotum, scutellum, coxae, and femora (fig. 1074). Recognized by the characters given in the key, and by the structure of the male genitalia (figs. 1079–1081).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.63, width pronotum 0.91; pronotum, mesoscutum, scutellum, thoracic pleura, and all coxae and femora dark brown; head, all antennal segments, and all tibiae and tarsi light yellow-tan; abdomen, except laterally, brown; abdominal conexiva, posterior one-third of veins of membrane, apex of corium along cuneal fracture, and extreme apex of cuneus suffused with brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1079–1081.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

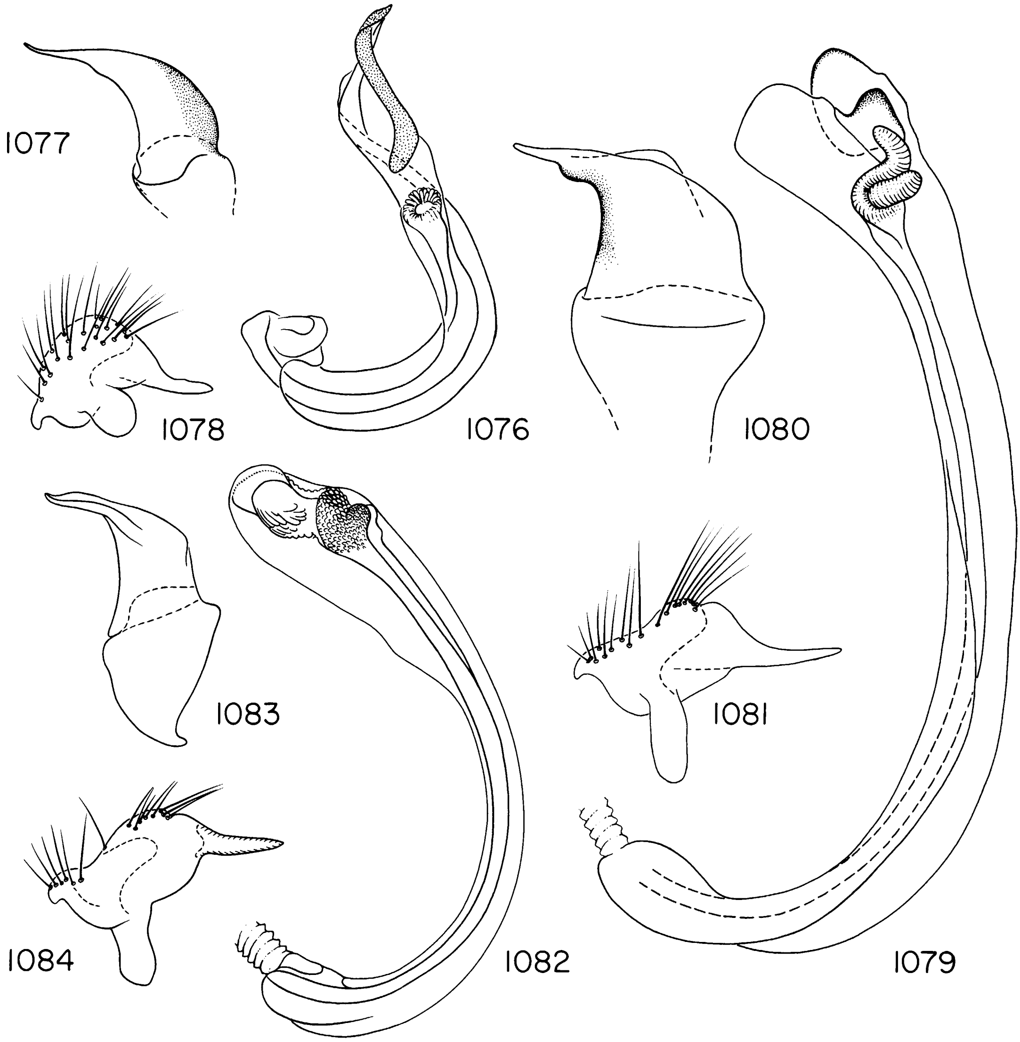
MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Dr. Per Brinck.

DISTRIBUTION: Sri Lanka.

HOLOTYPE ♂: SRI LANKA: *Sabaragamuwa Prov.:* Rakwana, at light, February 27, 1962, locality 100, collected by Brinck, Andersson, and Cederholm on Lund University Ceylon Expedition; deposited in Lund University Zoological Institute, Lund.

PARATYPES: Same data as holotype (AMNH, Lund), 2♀♀. SRI LANKA: *Sabaragamuwa Prov.:* Kitulgala, 21 mi. W of Ratnapura, March 17, 1962, at light (Brinck, Andersson, Cederholm; AMNH, Lund), 2♂♂, 1♀.



FIGS. 1076–1084. *Decomia* spp. 1076–1078. *D. appendix.* 1076. Vesica. 1077. Phallotheca. 1078. Left paramere. 1079–1081. *D. brincki.* 1970. Vesica. 1080. Phallotheca. 1081. Left paramere. 1082–1084. *D. cephalotes.* 1082. Vesica. 1083. Phallotheca. 1084. Left paramere.

Central Prov.: Mahaveli Ganga, 8 mi. WSW Nuwara-Eliya, March 18–19, 1962, at light (Brinck, Andersson, Cederholm; Lund), 1♂.

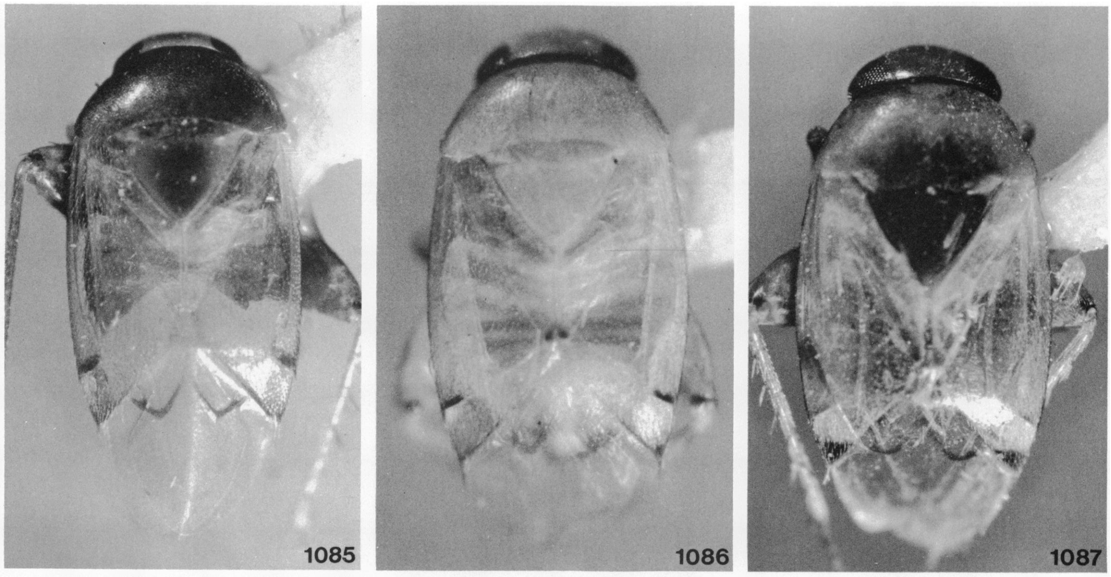
DISCUSSION: *Decomia brincki* is one of two species of the genus described from Sri Lanka.

Decomia cephalotes Poppius
Figures 1060, 1075, 1082–1084

Decomia cephalotes Poppius, 1915, p. 74.

DIAGNOSIS: Belongs to the group of species with dark brown or black pronotum, scutellum, coxae, and femora (fig. 1075). Recognized by the combination of characters given in the key, including the structure of the male genitalia (figs. 1082–1084).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.53, width pronotum 1.00; head, pronotum, scutellum, thoracic pleura and venter, all coxae, all femora except their apices, distal one-half of antennal segment two and all of antennal segment three (segment four missing in holotype), apex of clavus, apical area of corium along cuneal



Figs. 1085–1087. *Decomia* spp. 1085. *D. chiangdaoensis,* holotype. 1086. *D. dialeptos,* holotype. 1087. *D. fuscoscutellata,* holotype.

fracture, and apex of cuneus, brownish black; veins of membrane weakly infuscate; antennal segment one, proximal one-half of antennal segment two, most of labium, apices of femora (possibly excluding metafemora which are missing in holotype), and all tibiae and tarsi light yellowish.

General structure, surface texture, and vestiture as in generic description.

Male Genitalia: Figures 1082–1084.

Female: Unknown.

Measurements: See Appendix.

Distribution: Figure 1060. Taiwan.

Specimen Examined: TAIWAN: KanKan (Koshun), August 1912 (Sauter; Deutsches Entomologisches Institut), 1♂ (holotype).

Discussion: This species has been neglected in the literature since its description, as has the Oriental fauna. It is now evident that *cephalotes* is a member of a large and widespread genus. At the moment it represents the northernmost record for the genus, and is the only species recorded from Taiwan.

Decomia chiangdaoensis, new species

Figures 1060, 1085, 1088–1090

Diagnosis: Recognized by the characters given in the key and the structure of the male genitalia (figs. 1088–1090).

Description: Macropterous male. Length apex tylus-cuneal fracture 1.73, width pronotum 1.03; pronotum, mesoscutum except laterally, scutellum, thoracic pleura, all coxae, metafemora, abdomen, and distal one-third of antennal segment two dark brown; head, remainder of antennae, labium, pro- and meso-femora, all tibiae and tarsi, and mesoscutum laterally yellow orange; apex of corium along cuneal fracture broadly and apical one-fourth of cuneus deep red; posterior two-thirds of membrane suffused with red-brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

Male Genitalia: Figures 1088–1090.

Female: Unknown.

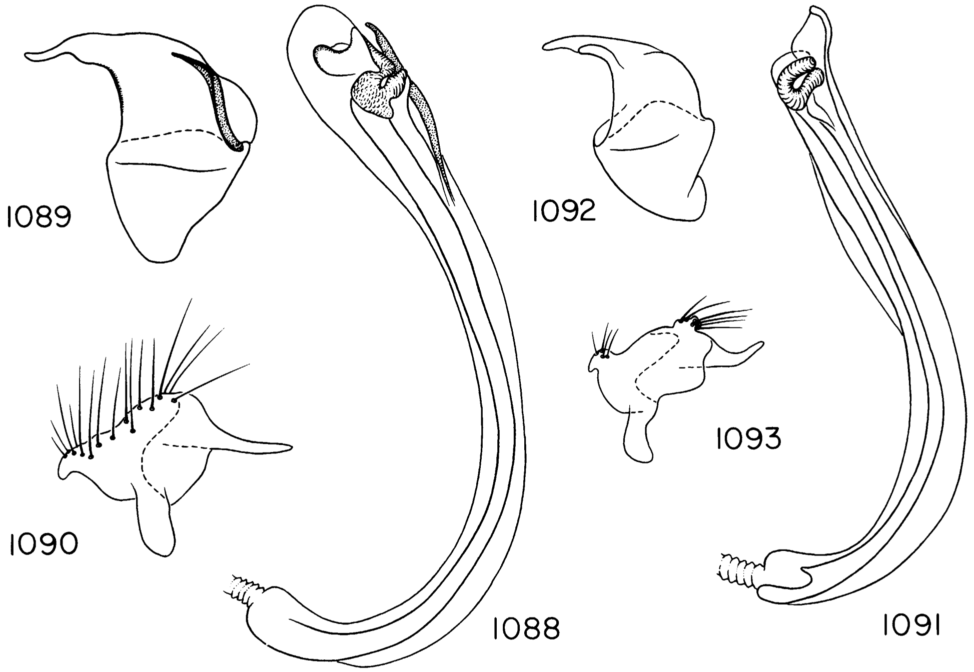
Measurements: See Appendix.

Etymology: Named for the type locality.

Distribution: Figure 1060. Thailand.

Holotype ♂: THAILAND: Chiangdao, April 5–11, 1958, native collector; deposited in the B. P. Bishop Museum, Honolulu.

Discussion: *Decomia chiangdaoensis* belongs to a group of species which are strongly reddish in coloration, and in which the markings at the apices of the corium and cuneus do not contrast strongly with the remainder of the dorsum.



Figs. 1088–1093. *Decomia* spp. 1088–1090. *D. chiangdaoensis.* 1088. Vesica. 1089. Phallotheca. 1090. Left paramere. 1091–1093. *D. dialeptos.* 1091. Vesica. 1092. Phallotheca. 1093. Left paramere.

Decomia dialeptos, new species

Figures 1060, 1086, 1091–1093

Diagnosis: Belongs to a group of species which is small and of generally light coloration; recognized by the combination of characters given in the key and especially the structure of the male genitalia (figs. 1091–1093).

Description: Macropterous male. Length apex tylus-cuneal fracture 1.25, width pronotum 0.70; basic coloration light yellowish with the following exceptions: extreme apex of clavus, apex of corium along cuneal fracture narrowly, and extreme apex of cuneus, dark brown; posterior one-third of membrane suffused with brown; apex of genital capsule nearly black; distal portion of metafemora suffused with red, area above tibiofemoral articulation strongly red; some areas on dorsum of abdomen strongly suffused with red.

Basic structure, surface texture, and vestiture as in generic description; posterior femora rather strongly enlarged.

Male Genitalia: Figures 1091–1093.

Female: Unknown.

Measurements: See Appendix.

Etymology: Named for its small size; from the Greek adjective *dialeptos.*

Distribution: Figure 1060. Philippine Islands.

Holotype ♂: PHILIPPINE ISLANDS: *Leyte:* Dagami, 14 mi. SW of Tacloban, August 1, 1961, Philippine Islands National Museum and American Museum of Natural History Expedition; deposited in the American Museum of Natural History, New York.

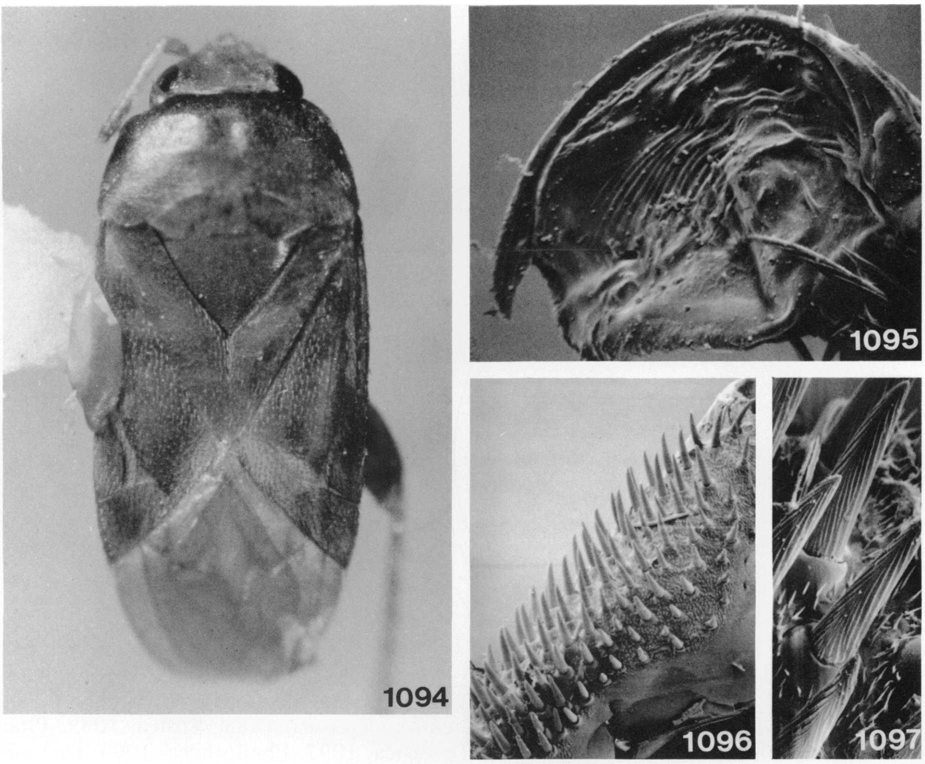
Paratype: PHILIPPINE ISLANDS: *Negros Island:* Dumaguete, Camp Lookout, 1300 feet, Feb. 15–April 1961 (Schneirla and Reyes; AMNH), 1♂.

Decomia fuscoscutellata, new species

Figures 1062, 1087, 1098, 1099

Diagnosis: Recognized by the characters given in the key and by the structure of the male genitalia (figs. 1098, 1099).

Description: Macropterous male. Length apex tylus-cuneal fracture 1.76, width pronotum 1.15; basic coloration rather bright yellow with the following exceptions: mesoscu-



Figs. 1094–1097. *Decomia gomphocoxa.* 1094. Dorsal view, holotype. 1095. Pretarsus. 1096. Procoxa, ventral surface. 1097. Detail of procoxal spines.

tum, except laterally, entire scutellum, posterior one-third of veins of membrane, extreme distal portion of metafemora dorsally, and entire genital segment dark brown; extreme distal portion of antennal segment two, antennal segments three and four, apex of labium, and posterior margin of corium along cuneal fracture narrowly, suffused with brown; posterior two-fifths of cuneus as measured along costal margin nearly black.

Basic structure, surface texture, and vestiture as in generic description; metafemora moderately enlarged.

Male Genitalia: Figures 1098 and 1099.

Female: See generic description.

Female Genitalia: Not examined.

Measurements: See Appendix.

Etymology: Named for its dark brown scutellum.

Distribution: Figure 1062. Western New Guinea.

Holotype ♂: INDONESIA: *West Irian:* Hol Maffen, 22 km. E Sarmi, July 18–19, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

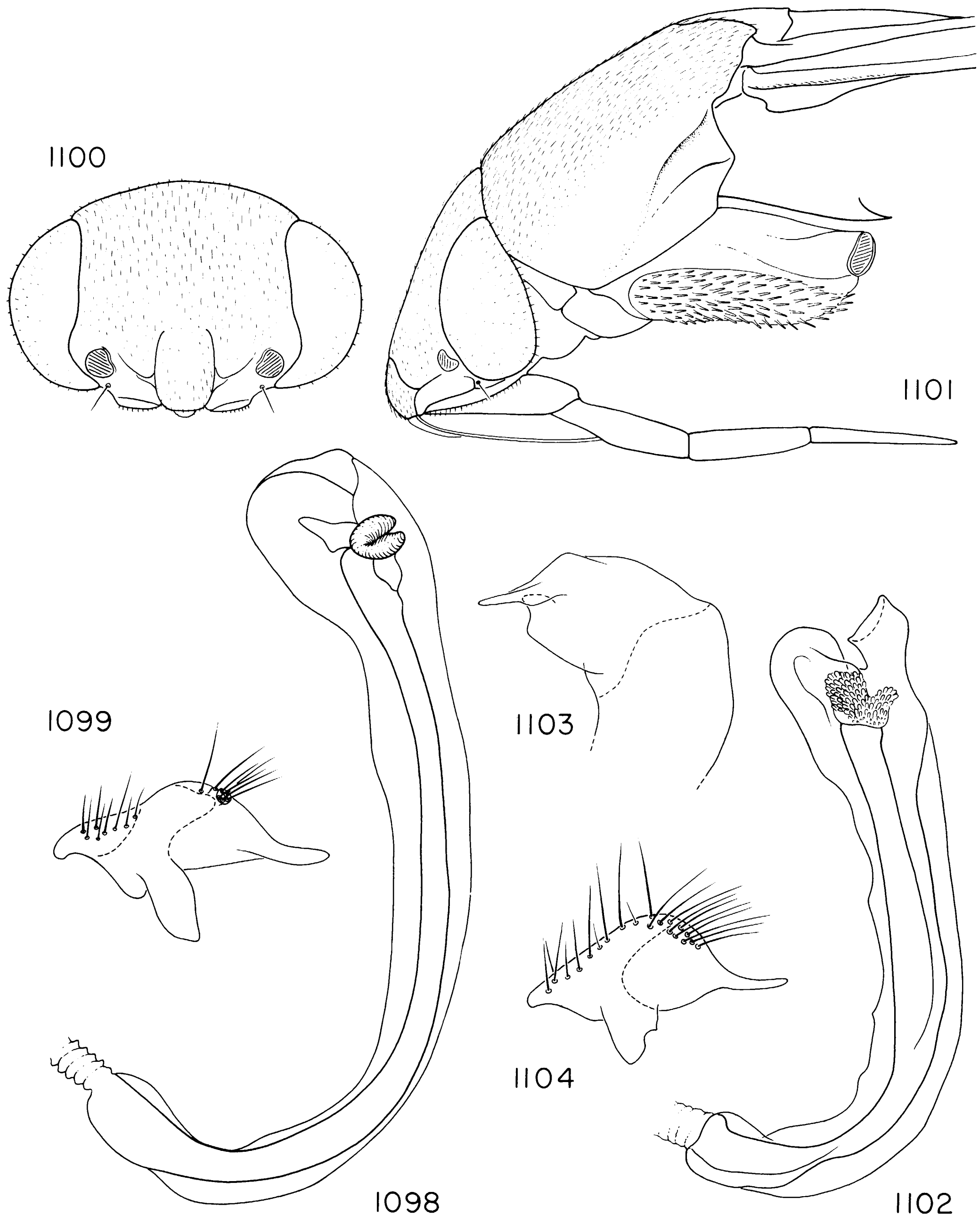
Paratypes: Same data as holotype, and July 1, 1959, MV light trap (AMNH, Bishop), 2♂♂. INDONESIA: *West Irian:* Sarmi, July 20–23, 1959, MV light trap (Maa; Bishop), 1♀.

Discussion: *Decomia fuscoscutellata* appears to form a group with *magna.* Both are large robust species which have dark markings on the pronotum and scutellum, but have light coxae and femora.

Decomia gomphocoxa, new species

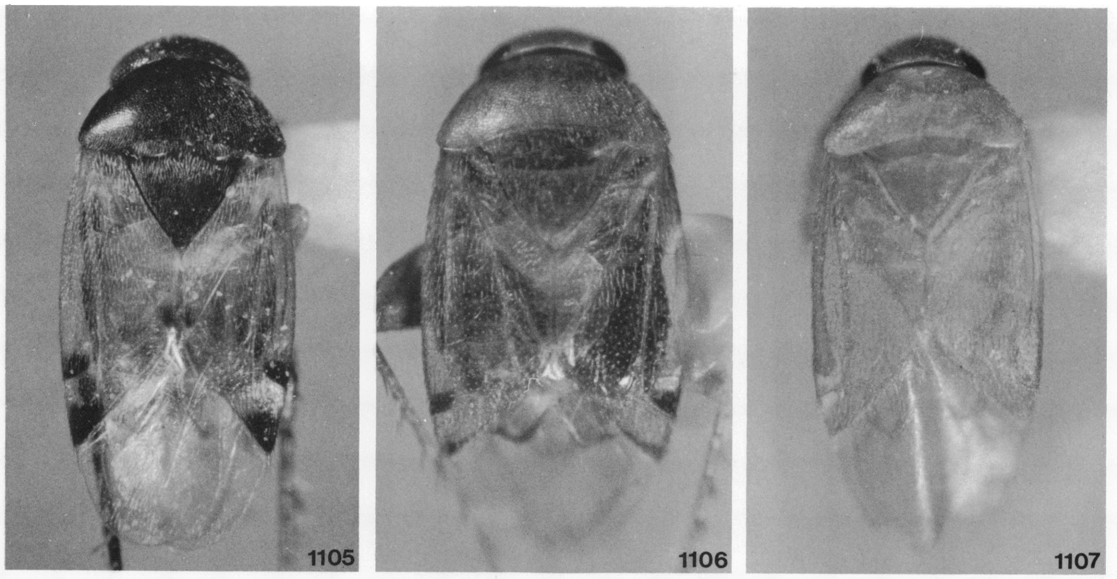
Figures 1060, 1094–1104

Diagnosis: *Decomia gomphocoxa* can be placed in the genus by the general body structure and particularly by the structure of the male genitalia (figs. 1102–1104). It differs from other *Decomia* species in the following characteristics: the head is more strongly oriented anteroposteriorly and not so strongly porrect; the pronotum is strongly excavated



FIGS. 1098–1104. *Decomia* spp. 1098, 1099. *D. fuscoscutella.* 1098. Vesica. 1099. Left paramere. 1100–1104. *D. gomphocoxa.* 1100. Frontal view of head. 1101. Lateral view of head and prothorax. 1102. Vesica. 1103. Phallotheca. 1104. Left paramere.

across the mesoscutum and the mesoscutum is much more broadly exposed; the hemelytra are translucent rather than hyaline; the apices of the corium and the cuneus have no distinct dark spots contrasting with the basic background coloration; and the procoxae are uniformly covered with stout peglike setae (figs. 1096, 1097) instead of the common setae.



FIGS. 1105–1107. *Decomia* spp. 1105. *D. gressitti,* holotype. 1106. *D. indochinensis,* holotype. 1107. *D. kalabakanensis,* holotype.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.67, width pronotum 0.97; basic coloration medium to light brown with a slight pruinosity; distal one-third of antennal segment two dark brown, contrasting with remainder of segment.

Basic surface texture less polished and not so strongly shining as in remaining *Decomia* species, vestiture similar to remaining species; vertex and frons flattened and uniformly angled anteroventrally, clypeus visible from above; pronotum strongly excavated across broadly exposed mesoscutum; lateroventral surface of procoxae covered with short stout peglike setae (figs. 1096, 1097, 1101); posterior femora strongly enlarged.

MALE GENITALIA: Figures 1102–1104.

FEMALE: Unknown.

ETYMOLOGY: From the Latin *gomphus,* peg, and coxa.

DISTRIBUTION: Figure 1060. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah* (SE): Tawau, Quoin Hill Cocoa Research Station, October 3, 1962, primary forest, Y. Hirashima collector; deposited in the B. P. Bishop Museum, Honolulu.

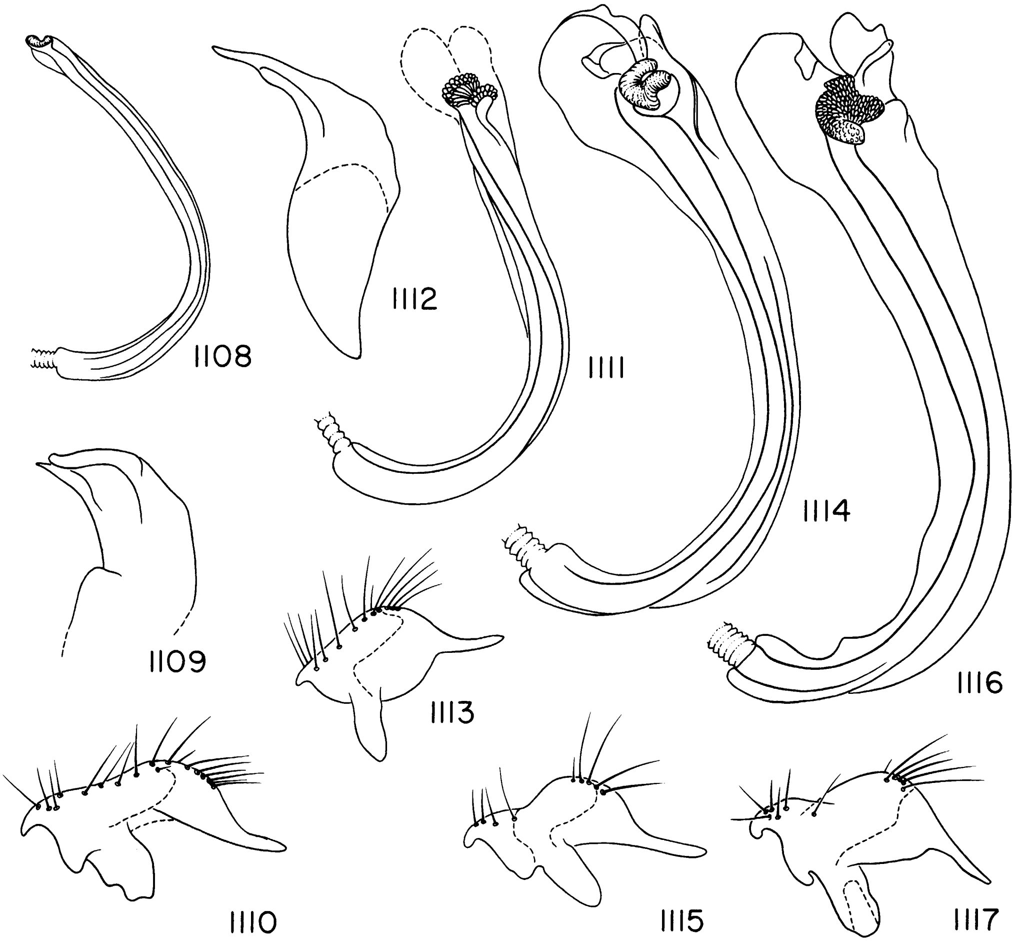
Decomia gressitti, new species

Figures 1062, 1105, 1108–1110

DIAGNOSIS: Belongs to a group of species with a black pronotum and scutellum (fig. 1105); it also has generally black coxae and femora. Recognized by the characters in the key, as well as the form of the male genitalia (figs. 1108–1110).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.52, width pronotum 0.88; general coloration dark brown with the following exceptions: Hemelytra more or less hyaline, somewhat yellow-tan in coloration; membrane without distinct coloration, except posterior one-third of veins brownish; apex of corium broadly and posterior one-half of cuneus very dark brown; antennal segment one, basal three-fifths of antennal segment two, antennal segment three, distal one-half of profemora, mesofemora on extreme distal portion, all trochanters, all tibiae and tarsi, and metathoracic scent-gland evaporatory area yellow-tan.

Basic structure, surface texture, and vestiture as in generic description; posterior femora greatly enlarged.



FIGS. 1108–1117. *Decomia* spp. 1108–1110. *D. gressitti.* 1108. Vesica. 1109. Phallotheca. 1110. Left paramere. 1111–1113. *D. kalabakanensis.* 1111. Vesica. 1112. Phallotheca. 1113. Left paramere. 1114–1117. *D. indochinensis.* 1114. Vesica (Viet Nam). 1115. Left paramere (Viet Nam). 1116. Vesica (Thailand). 1117. Left paramere (Thailand).

MALE GENITALIA: Figures 1108–1110.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for J. L. Gressitt.

DISTRIBUTION: Figure 1062. New Britain.

HOLOTYPE ♂: PAPUA NEW GUINEA: *East New Britain Prov.:* New Britain, Gazelle Peninsula, Bainings, St. Paul's, 350 m., September 4, 1955, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

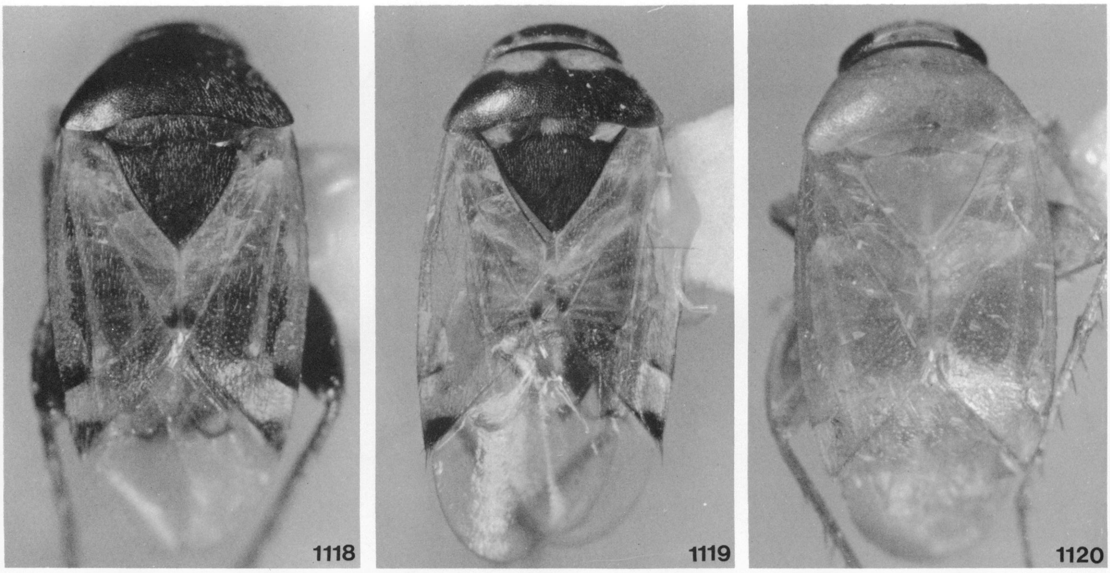
PARATYPES: Same data as holotype, and September 4–9, 1955 (Bishop, AMNH), 8♂♂, 8♀♀.

Decomia indochinensis, new species

Figures 1060, 1106, 1114–1117

DIAGNOSIS: Belongs to a group of species with reddish markings at the apex of the corium and cuneus; recognized by the characters given in the key and the form of the male genitalia (figs. 1114–1117).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.63, width prono-



FIGS. 1118–1120. *Decomia* spp. 1118. *D. maai,* holotype. 1119. *D. magna,* holotype. 1120. *D. malayensis,* holotype.

tum 0.94; basic coloration light brown or reddish brown with the following exceptions: Distal two-fifths of antennal segment two dark brown, thoracic pleura and meso- and metacoxae brown; abdomen reddish brown; apex of genital capsule nearly black, metafemora brown on proximal two-thirds, strongly suffused with red distally; apices of corium and cuneus broadly banded in bright red; posterior two-thirds of veins of membrane brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1114–1117.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Indochina.

DISTRIBUTION: Figure 1060. Thailand and Viet Nam.

HOLOTYPE ♂: VIET NAM: 6 km. SW Dalat, 1550 m., November 11, 1960, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 1♂, 2♀♀.

ADDITIONAL SPECIMENS: THAILAND: Chaingdao, April 5–11, 1958 (Maa; AMNH, Bishop), 2♂♂. *Chiangmai Prov.:* Doi Suthep, March 28–31, 1958 (Maa; AMNH), 1♀.

DISCUSSION: Although there are some minor differences in the male genitalia of the specimens from Viet Nam and Thailand, I have included all of them under *indochinensis* because of the shortness of the series, the lack of understanding of variation in the group, and the difficulty in separating the available specimens into more than one group.

Decomia kalabakanensis, new species

Figures 1060, 1107, 1111–1113

DIAGNOSIS: Belongs to a group of species with reddish markings at the apex of the corium and cuneus. Recognized by the characters given in the key and the form of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.35, width pronotum 0.70; basic coloration light orange-brown except as follows: distal one-half of antennal segment two and antennal segments three and four dark brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1111–1113.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Kalabakan, near the type locality.

DISTRIBUTION: Figure 1060. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah:* Tawau Residency, 19 km. N of Kalabakan, forest camp, 60 m., October 30, 1962, K. J. Kuncheria collector; deposited in the B. P. Bishop Museum, Honolulu.

Decomia maai, new species

Figures 1062, 1118, 1121–1126

DIAGNOSIS: Belongs to a group of species with a dark brown or black pronotum, scutellum, coxae, and femora; recognized by the characters given in the key and the form of the male genitalia (figs. 1125, 1126).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.73, width pronotum 1.04; entire body and appendages castaneous to nearly black with the following exceptions: antennal segment one distally, antennal segments three and four, pro- and meso-femora distally, pro- and meso-tibiae and tarsi yellow tan; metatibiae and tarsi suffused with dark brown; posterior one-third of veins of membrane brown, extreme apex of clavus, apex of corium broadly along cuneal fracture, and posterior one-half of cuneus nearly black; hemelytra subhyaline, somewhat grayish in appearance.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1125 and 1126.

FEMALE: Macropterous. See generic description (figs. 1123, 1124).

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for T. C. Maa.

DISTRIBUTION: Figure 1062. New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Cyclops Mountains, W of Sentani, 50–100 m., June 22–24, 1959, light trap, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, and 75 m. (Maa; AMNH, Bishop), 15♂♂, 11♀♀. INDONESIA: *West Irian:* Sentani, SW of Cyclops, 100 m., MV light trap, June 15, 1959 (Gressitt and Maa; Bishop), 6♂♂, 6♀♀. PAPUA NEW GUINEA: *West Sepik Prov.:* Torricelli Mountains, Mobetei, 750 m., February 28–March 4, 1959 (Brandt; Bishop), 1♂.

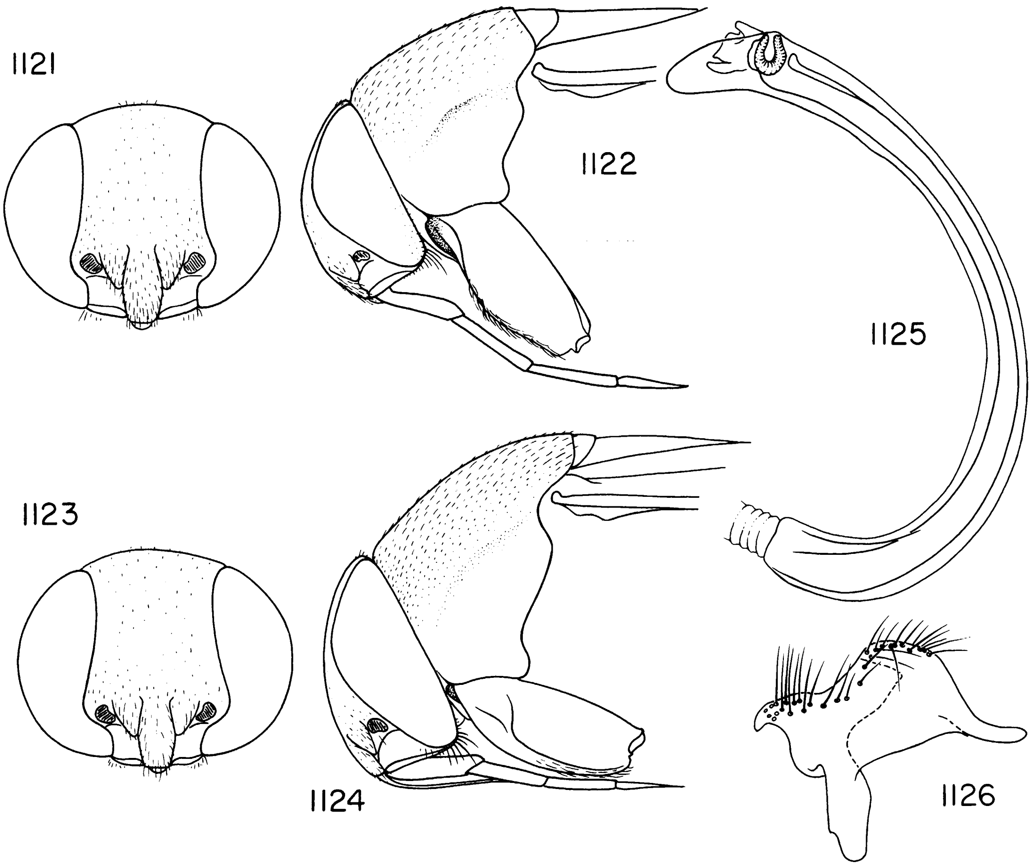
ADDITIONAL SPECIMENS: INDONESIA: *West Irian:* Cyclops Mountains, Sabron, 1200–2000 feet, May–July 1936 (Cheesman; BMNH), 2♀♀; Hol Maffen, 22 km. E of Sarmi, July 18–19, 1959 (Maa; Bishop), 1♀; Hollandia, February 28, 1960, MV light trap (Maa; Bishop), 1♀; Hollandia area, Sentani, ±90 m., July 15–18, 1959, MV light trap (Gressitt and Maa; Bishop), 1♂, 1♀; River Tor mouth, 4 km. E of Hol Maffen, July 19, 1959 (Maa; Bishop), 1♀; Japen Island, SSE Sumberbaba, Dawai River, October 5, 1962, light trap in jungle (Holtmann; Bishop), 5♀♀. PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Tapo (Tapu), 2 km. NW of Kainantu, 1650 m., October 22, 1959 (Maa; Bishop), 2♀♀. *Madang Prov.:* Finisterre Range, Saidor, Matoko, August 28–September 5, 1958 (Brandt; Bishop), 1♀; Finisterre Mountains, Budemu, *ca.* 400 feet, October 15–24, 1964 (Bacchus; BMNH), 1♂. *Morobe Prov.:* Lae, December 10, 1964 (Bacchus; BMNH), 1♀; Wau, 1100–1300 m., March 28–29, 1966, July 1968 and September 11, 1972, light trap (Gressitt, Scudder; Bishop), 4♀♀.

Decomia magna, new species

Figures 1062, 1067–1069, 1119, 1127–1129

DIAGNOSIS: Largest known species of *Decomia.* In addition to its size, recognized by the brown markings on the head and pronotum and the brown scutellum (fig. 1119) in conjunction with the light-colored coxae and femora, and form of the male genitalia (figs. 1127–1129).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.89, width pronotum 1.14; dark brown as follows: vertex, except extreme posterior margin, posterior lobe of pronotum except on lateral margins, mesoscutum except laterally and mesially, scutellum, posterior margin of corium along cuneal fracture narrowly, extreme apex of clavus, posterior one-third of cuneus, and entire genital segment; posterior one-fourth of veins of membrane, abdominal sterna, extreme apex of antennal segment two, antennal segment



FIGS. 1121–1126. *Decomia maai.* 1121. Frontal view of head, ♂. 1122. Lateral view of head and prothorax, ♂. 1123. Frontal view of head, ♀. 1124. Lateral view of head and prothorax, ♀. 1125. Vesica. 1126. Left paramere.

four, apex of labium, submarginal area of propleuron, and metathoracic scent-gland evaporatory area suffused with brown; remainder of body and appendages light yellow-tan.

Basic structure, surface texture, and vestiture as in generic description; posterior femora distinctly enlarged.

Male Genitalia: Figures 1127–1129.

Female: See generic description.

Female Genitalia: Posterior wall simple.

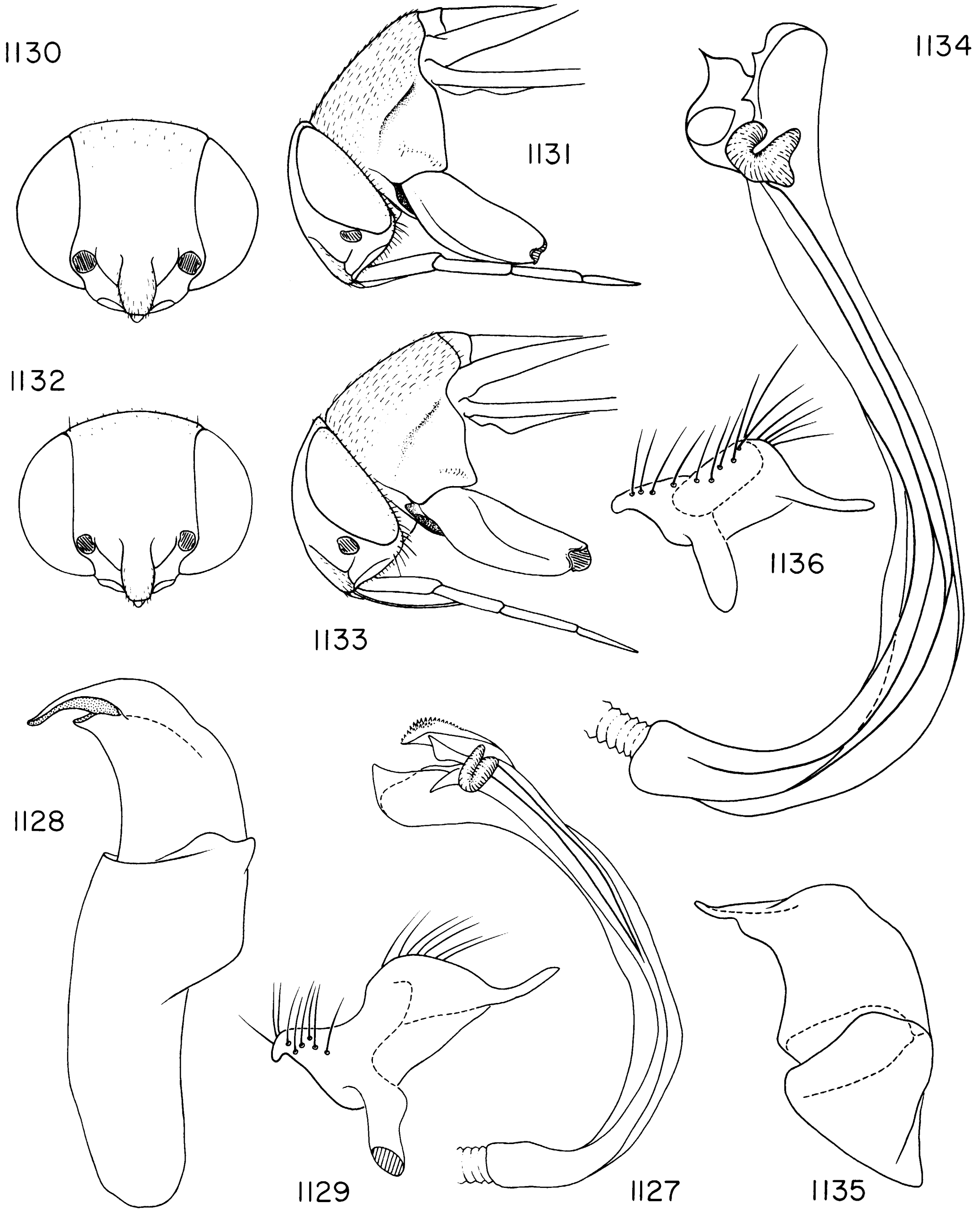
Measurements: See Appendix.

Distribution: Figure 1062. New Guinea.

Etymology: Named for its large size; from the Latin word, *magnus.*

Holotype ♂: PAPUA NEW GUINEA: *Morobe Prov.:* Wau, August 18, 1972, 1800–1900 hours, MV light trap, G. G. E. Scudder collector; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype, but August 11, 1972 (Bishop), 1♂; same data as holotype, but August 14, 1972 (Bishop), 1♀. INDONESIA: *West Irian:* Vogelkop, Fak Fak, S coast of Bomberai, 100–700 m., June 5, 1959 (Maa; Bishop), 2♂♂, 1♀; Wisselmeren, Enarotadi, 1900 m., July 30, 1955, light trap (Gressitt; Bishop), 1♀; Wisselmeren, Enarotadi, 1850 m., July 18–19, 1962, malaise trap (Sedlacek; Bishop), 1♀. PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Kainantu, 1650 m., October 20–26, 1959, MV light trap (Maa; Bishop), 1♂, 1♀. *Morobe Prov.:* Wau, 1200 m., October 1–4, 1962 (Sedlacek; Bishop) 1♀; Mt. Kaindi, 2350 m., September 18, 1972, MV light trap (Scudder; Bishop),



FIGS. 1127–1136. *Decomia* spp. 1127–1129. *D. magna*. 1127. Vesica. 1128. Phallotheca. 1129. Left paramere. 1130–1136. *D. malayensis*. 1130. Frontal view of head, ♂. 1131. Lateral view of head and prothorax, ♂. 1132. Frontal view of head, ♀. 1133. Lateral view of head and prothorax, ♀. 1134. Vesica. 1135. Phallotheca. 1136. Left paramere.

1♀; Watut-Aseki Divide, 1800 m., April 11, 1974 (Gressitt; Bishop), 1♀. *Southern Highlands Prov.:* ridge W of Dimifa, S of Mt. Giluwe, 2350 m., October 11, 1958, light trap (Gressitt; AMNH, Bishop), 4♂♂, 5♀♀. *Western Highlands Prov.:* 6.4 km. W of Wabag, 2020 m., June 13, 1963 (Sedlacek; Bishop), 1♀. [*Prov. unknown*]: Eliptamin Valley, 1665–2530 m., June 19, 1959 (Brandt; Bishop), 1♂; Eliptamin Valley, 1200–2350 m., August 1–15, 1959 (Brandt; Bishop), 1♀; Kapilam, 2400 m., June 20–22, 1963, light trap (Sedlacek; Bishop), 2♀♀.

Decomia malayensis, new species

Figures 1060, 1066, 1120, 1130–1136

DIAGNOSIS: Recognized among light-colored species by its size, reddish nature of markings at apex of corium and cuneus, the dark distal one-half of antennal segment two, and the structure of the male genitalia (figs. 1134–1136); most easily confused with *tenompokensis.*

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.74, width pronotum 0.95; body and appendages unicolorous light yellow-brown with the following contrasting markings: distal one-half of antennal segment two castaneous, apical margin of corium and apical margin of cuneus red.

General structure, surface texture and vestiture as in generic description; posterior femora strongly enlarged.

MALE GENITALIA: Figures 1134–1136.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Malaysia.

DISTRIBUTION: Figure 1060. Malay Peninsula and northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah:* Tenompok, E of Jesselton, February 15, 1959, T. C. Maa collector; deposited in B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but February 10–19, 1959 (AMNH, Bishop), 124♂♂, 235♀♀. MALAYSIA: *Sabah:* Interior Residency, Sensuron, January 8, 1958 (Maa; Bishop), 1♀; Tawau Residency, Tawau, Quoin Hill Cocoa Research Station, September 13, 1962, malaise trap (Hirashima; Bishop), 5♀♀; West Coast Residency, Ranau, January 27, 1959, September 30–October 5, 1958 (Maa; Bishop), 16♂♂, 23♀♀; West Coast Residency, Tenompok, 48 km. E Jesselton, 1460 m., February 10–19, 1959 (Maa; Bishop), 1♂, 37♀♀; West Coast Residency, Tenompok, 30 km. E of Jesselton, 1460 m., February 19, 1959 (Maa; Bishop), 2♂♂; West Coast Residency, Tenompok, Mt. Kinabalu, November 6, 1959 (Maa; Bishop), 1♀. *Sarawak:* Bau District, Bidi, 90–240 m., September 2–3, 1958 (Maa; Bishop), 2♂♂, 6♀♀; Nanga Pelagus near Kapit, 180–585 m., August 7–14, 1958 (Maa; Bishop), 2♂♂, 4♀♀.

ADDITIONAL SPECIMENS: MALAYSIA: *Malaya:* Kuala Lumpur, March 15, 1923, at light (Pendlebury; BMNH), 1♀.

DISCUSSION: *Decomia malayensis* is nearly identical with *tenompokensis* in external morphology. The amount of dark coloration on the second antennal segment allows for separation of either sex of both species. This character is most easily used when comparative material is available. The male genitalia are also diagnostic. I have examined a number of female specimens without antennae, which could not be assigned to one species or the other.

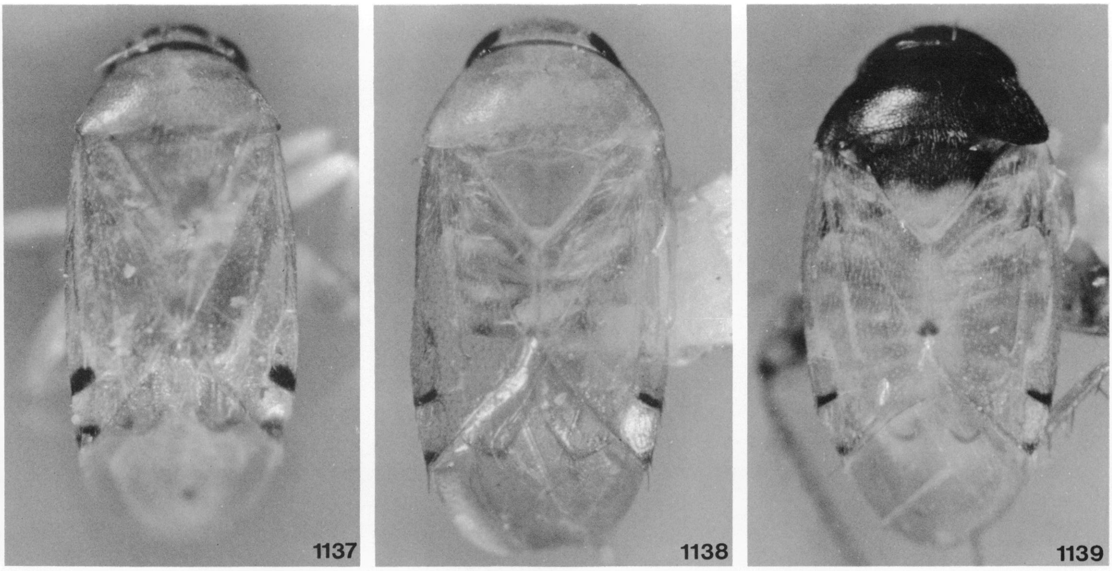
Decomia microgonoporos, new species

Figures 1061, 1137, 1140–1142

DIAGNOSIS: Recognized by the combination of characters given in the key, including its small size, orange suffusion of the head and thorax, and the light-colored femora with the distal one-half of the metafemora suffused with red; metafemora not greatly enlarged as in most species of *Decomia.* Vesica of male distinctive, with a very weakly developed secondary gonopore (figs. 1140–1142).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.13, width pronotum 0.60; basic coloration of thorax, including scutellum and abdomen yellow-orange with much strong reddish suffusion; appendages including pro- and meso-coxae nearly white; metacoxae brownish; distal one-half of metafemora strongly suffused with red; vertex (except extreme posterior margin), frons, and genital segment dark brown; posterior one-half of veins of membrane suffused with brown; apex of corium along cuneal fracture broadly and posterior one-third of cuneus nearly black.

Basic structure, surface texture, and vestiture as in generic description; metafemora only weakly enlarged.



FIGS. 1137–1139. *Decomia* spp. 1137. *D. microgonoporos,* holotype. 1138. *D. minuscula,* holotype. 1139. *D. nigroalba,* ♂, Philippine Islands, Negros Island, Dumaguete.

MALE GENITALIA: Figures 1140–1142.

FEMALE: Macropterous. See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the very small secondary gonopore in the males; from the Greek words *micros,* small, *gonos,* procreation, etc., and the Greek *poros,* pore.

DISTRIBUTION: Figure 1061. Philippine Islands, Malay Peninsula, and northern Borneo.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Tawi Tawi:* Lapid Lapid at Manalik Channel, November 19, 1961, MV light, 1900–0200 hours, collected on the Noona-Dan Expedition; deposited in the University Zoological Museum, Copenhagen.

PARATYPES: Same data as holotype (AMNH, Copenhagen), 8♂♂, 5♀♀. PHILIPPINE ISLANDS: *Tawi Tawi:* Tarawakan, N of Batu Batu, November 13, 1961, MV light (Copenhagen), 1♂. *Palawan:* Mantalingalen, Pinigisan, 600 m., September 21, 1961 (Copenhagen), 1♀.

ADDITIONAL SPECIMENS: MALAYSIA: *Sabah:* Tawau Residency, Tawau, Quoin Hill Cocoa Research Station, 225 m., September 19–October 6, 1962, malaise trap, primary forest (Hirashima; Bishop), 3♂♂, 4♀♀. *Sarawak:* Kuching, Matang, 450–894 m., September 15, 1958, MV light trap (Gressitt and Maa; AMNH, Bishop), 7♂♂, 4♀♀. *Malaya:* Kuala Lumpur, September 4, 1932, November 1, 1937, at light (BMNH), 2♀♀; Puhand, Kuala Tahan, December 15–16, 1958 (Quate; Bishop), 2♀♀. PHILIPPINE ISLANDS: *Leyte:* Abuyog, 35 km. S of Tacloban, July 7–14, 1961 (AMNH), 1♀. *Negros Island:* Dumaguete, Camp Lookout, May 22, 1961 (Schneirla and Reyes; AMNH), 1♀.

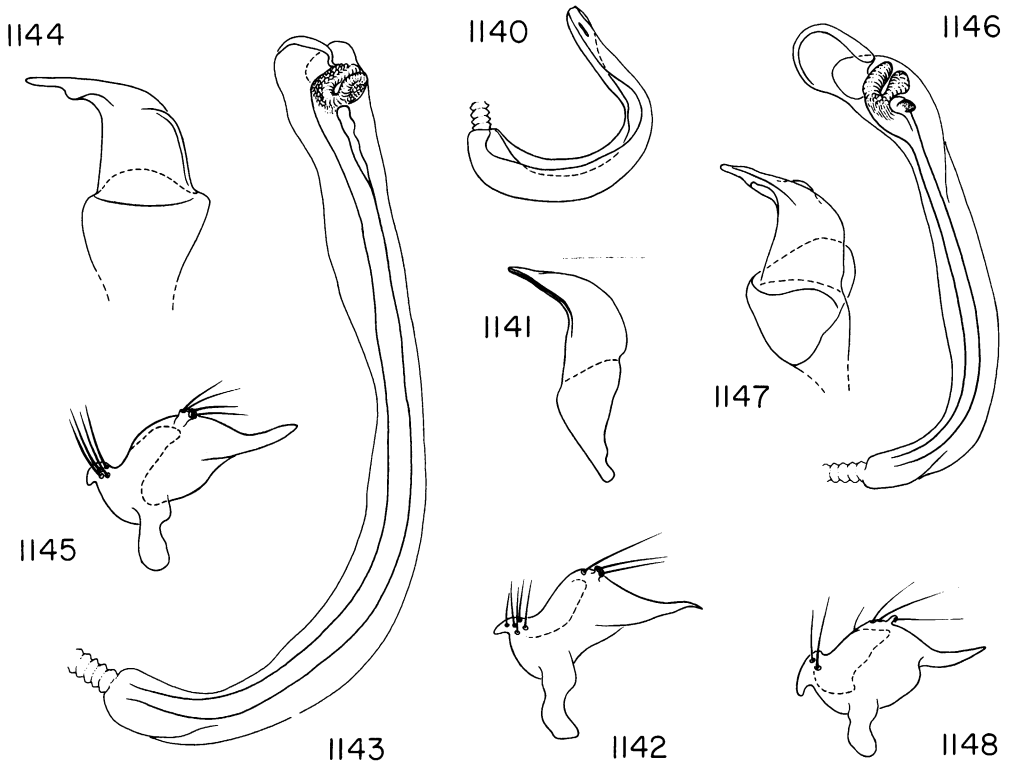
DISCUSSION: *Decomia microgonoporos* is unique among the Oriental species of *Decomia* with its very weakly developed secondary gonopore in the male (see also *colae* from Africa). The absence of the greatly enlarged metafemora in *microgonoporos* is found in common with *terminalis.*

Decomia minuscula, new species

Figures 1061, 1138, 1143–1145

DIAGNOSIS: Recognized by the combination of characters given in the key, and particularly the structure of the male genitalia (figs. 1143–1145).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.46, width prono-



Figs. 1140–1148. *Decomia* spp. 1140–1142. *D. microgonoporos.* 1140. Vesica. 1141. Phallotheca. 1142. Left paramere. 1143–1145. *D. minuscula.* 1143. Vesica. 1144. Phallotheca. 1145. Left paramere. 1146–1148. *D. nigroalba.* 1146. Vesica. 1147. Phallotheca. 1148. Left paramere.

tum 0.86; general coloration very light yellow-tan except as follows: apex of corium along cuneal fracture, extreme apex of cuneus, apex of clavus faintly, apex of labium, antennal segments three and four (faintly) dark brown; metafemora suffused with red distally, extreme distal region at tibiofemoral articulation dark brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

Male Genitalia: Figures 1143–1145.

Female: Unknown.

Measurements: See Appendix.

Etymology: Named for its small size; from the Latin *minuscula,* small.

Distribution: Figure 1061. Northern Borneo.

Holotype ♂: MALAYSIA: *Sabah:* Tawau Residency, Tawau, Quoin Hill, Cocoa Research Station, November 17, 1962, light trap, Y. Hirashima collector; deposited in the B. P. Bishop Museum, Honolulu.

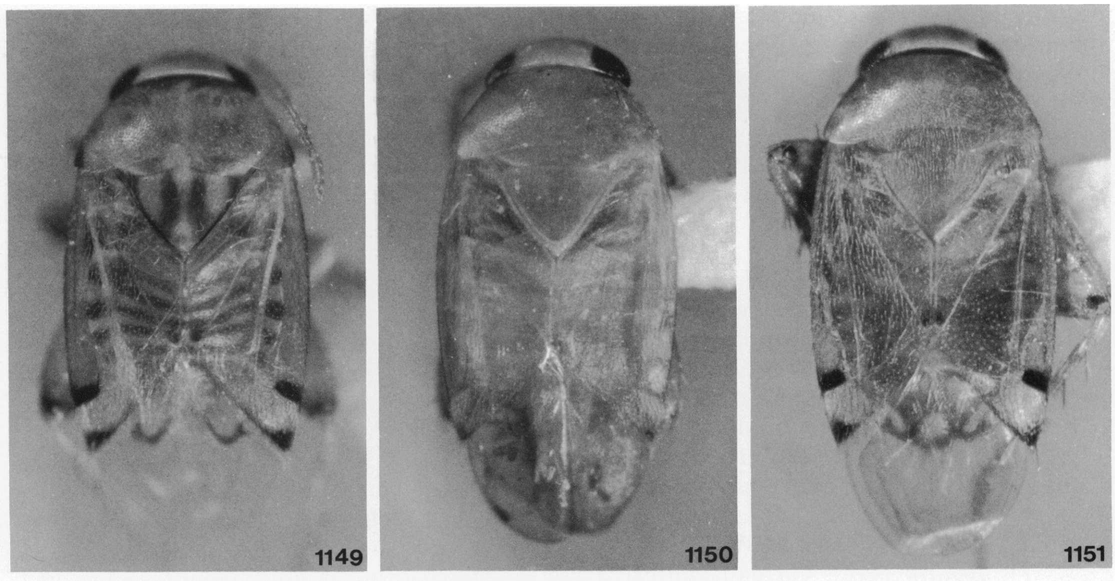
Paratype: MALAYSIA: *Sarawak:* Mt. Matang, December 1913 (Bryant; BMNH), 1♂.

Discussion: *Decomia minuscula* belongs to a group of small light-colored species, the members of which can be positively identified only by the male genitalia. This species belongs to the subgroup in which the membranous terminal elaboration of the vesica is oriented to the left and the setae on the posterior process of the left paramere are situated on a pendruncle.

Decomia nigroalba, new species

Figures 1061, 1139, 1146–1148

Diagnosis: Recognized by the totally black head and pronotum, and the black anterior half of scutellum in combination with the



FIGS. 1149–1151. *Decomia* spp. 1149. *D. notata,* holotype. 1150. *D. papuensis.* 1151. *D. parva.*

white coxae (fig. 1139), as well as the structure of the male genitalia (figs. 1146–1148).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.33, width pronotum 0.79; head, pronotum, mesoscutum, anterior one-half of scutellum, thoracic pleuron, extreme apex of clavus, apex of corium narrowly along cuneal fracture, extreme apex of cuneus, and apex of genital capsule black; distal one-third of metafemora suffused with red and castaneous; remainder of body and appendages yellow-white.

Basic structure, surface texture, and vestiture as in generic description; metafemora moderately enlarged.

MALE GENITALIA: Figures 1146–1148.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: From the Latin words *nigra,* black, and *alba,* white, indicating its conspicuously contrasting markings.

DISTRIBUTION: Figure 1061. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Negros Island:* Dumaguete, Camp Lookout, 1300 feet, March 6, 1961, T. Schneirla and A. Reyes collectors; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype but also February 15–April 15, 1961 (AMNH), 1♂, 3♀♀.

DISCUSSION: This is one of the most distinctive species of *Decomia* with its contrasting black and white coloration.

Decomia notata, new species

Figures 1062, 1065, 1149, 1152–1160

DIAGNOSIS: Recognized by the tan coloration with medium brown markings, especially the somewhat variable longitudinal ones on either side of the midline of the scutellum; also recognized by the structure of the male genitalia (figs. 1152–1160).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.41, width pronotum 0.87; basic coloration tan with the following medium brown markings: distal one-fifth of antennal segment two, all coxae, meso- and meta-thoracic pleura (metathoracic scent-gland evaporatory area white), metafemora, apical portion of genital capsule, posterior margins of most abdominal terga and sterna, anterior margin of pronotum (irregularly), posterolateral angle of pronotum, mesoscutum (except laterally), scutellum longitudinally on either side of midline, and posterior portion of vein of membrane; apex of corium along cuneal fracture and posterior one-third of cuneus nearly black; distal one-fifth of metafemora suffused with red.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1152–1160.

FEMALE: See generic description.

FEMALE GENITALIA: Posterior wall simple.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the longitudinal brown markings usually present on the scutellum; from the Latin *notata,* marked.

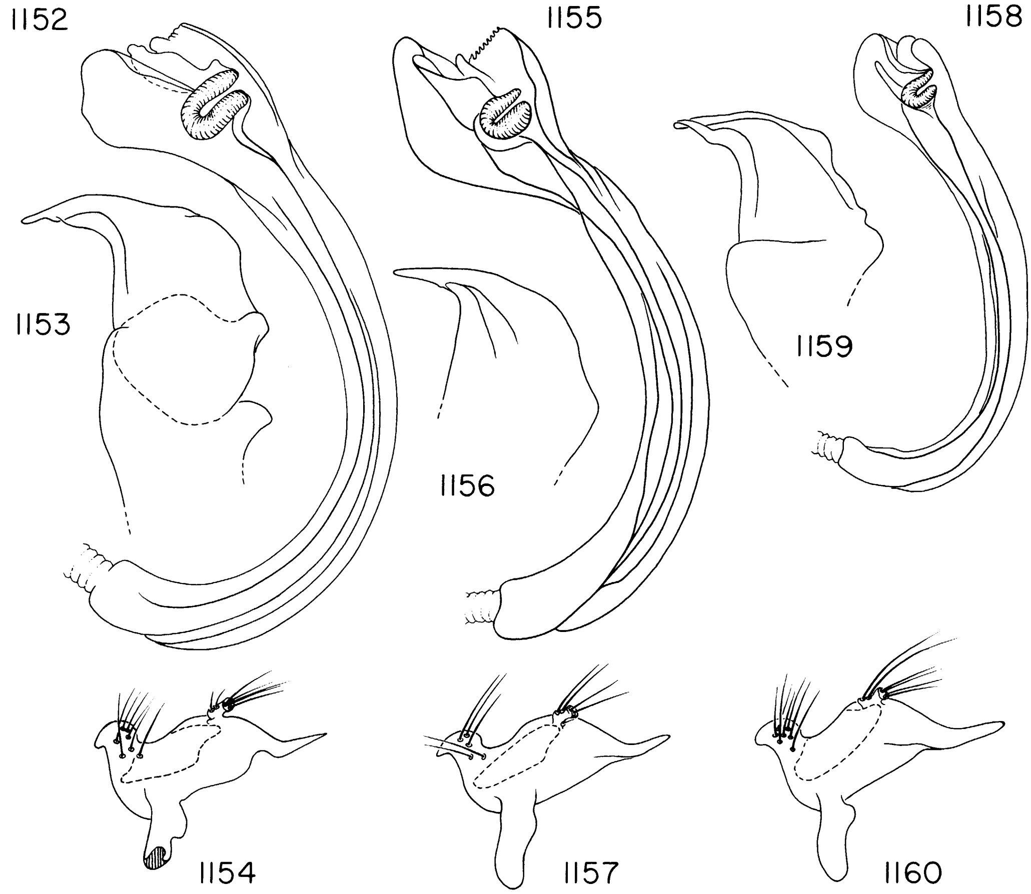
DISTRIBUTION: Figure 1062. New Guinea, Bismarck Archipelago, and the Solomon Islands.

HOLOTYPE ♂: PAPUA NEW GUINEA: *East New Britain Prov.:* Gazelle Peninsula, Bainings, St. Paul's, 350 m., September 4, 1955, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, except September 4–9, 1955 (AMNH, Bishop), 33♂♂, 3♀♀.

ADDITIONAL SPECIMENS: INDONESIA: *West Irian:* Hol Maffen, 22 km. E of Sarmi, July 18–19, 1959 (Maa; Bishop), 1♂, 13♀♀; Sarmi, July 20–23, 1959, MV light trap (Maa; Bishop), 2♀♀; River Tor mouth, 4 km. E of Hol Maffen, July 19, 1959 (Maa; Bishop), 4♀♀; Hollandia Area, Cyclops Mountains W of Sentani, 50–200 m., June 22–25, 1959, MV light trap (Maa; Bishop), 4♂♂, 1♀; Waris, S of Hollandia, 450–500 m., August 15–24, 1959, at light (Maa; Bishop), 1♂; Sentani, SW of Cyclops, 100 m., June 15, 1969, MV light trap (Gressitt and Maa; Bishop), 3♂♂, 1♀; Archbold Lake, Central Mountains, 760 m., November 26, 1961, light trap (Quate and Quate; Bishop), 1♂; Kebar Valley, Vogelkop, W of Manokwari, 550 m., January 4–31, 1962, light trap (Quate and Quate; Bishop), 1♀. PAPUA NEW GUINEA: *Bougainville Prov.:* Guaba, 720 m., June 19, 1956, light trap (Ford; Bishop), 1♀; Kieta, June 12, 1956, light trap (Gressitt; Bishop), 2♂♂, 1♀; Sohano, June 13, 1956, light trap (Gressitt; Bishop), 1♀. *Central Prov.:* W of Hanuabada near Port Moresby, 1 m., September 28, 1958 (Gressitt; Bishop), 1♀; Mamai Plantation E of Port Glasgow, 150 m., January 30, 1965, light trap (Straatman; AMNH, Bishop), 15♂♂, 90♀♀. *Eastern Highlands Prov.:* Kratke Mountains, Valley of Upper Wanton River, 1400 m., October 12, 1959 (Brass; AMNH), 1♀. *East Sepik Prov.:* Maprik, 160 m., October 14, 1957 (Gressitt; Bishop), 1♀. *Milne Bay Prov.:* Milne Bay, Dawa Dawa, 1–10 m., December 2–6, 1956 (Brass; AMNH), 3♂♂, 4♀♀; Maneau Range, north slope of Mt. Dayman, 700 m., July 13–20, 1953 (Tate; AMNH), 4♂♂; Modewa Bay, 0–50 m., December 14, 1956 (Brass; AMNH), 10♀♀; Cape Vogel Peninsula, Menapi, 0–3 m., March 26–30, 1953 (Tate; AMNH), 1♀; Moi Biri Bay, Baiawa, 0–30 m., May 8–11, 1953 (Tate; AMNH), 1♀. *Madang Prov.:* Adelbert Mountains, Wanuma, 800–1000 m., October 26–27, 1958, light trap (Gressitt; Bishop), 8♂♂, 8♀♀; Madang District, Finisterre Mountains, Damanti, 3550 feet, October 2–11, 1964 (BMNH), 1♀; Finisterre Range, Saidor, Matoko, August 28–September 5, 1958 (Brandt; Bishop), 2♀♀. *Manus Prov.:* Manus Island, Rossum, 6 km. SE of Lorengau, 180 m., December 23, 1959 (Maa; Bishop), 1♂. *Morobe Prov.:* 11.2 km. N of Bulolo, 600 m., March 11, 1962 (Sedlacek; Bishop), 1♀; Huon Peninsula, Finschhafen, 10 m., April 9–16, 1963, MV light trap (Sedlacek; Bishop), 2♀♀; Finschhafen (Jarcho; Bishop), 1♀; Lae, 10 m., May 12, 1966, light trap (Gressitt; Bishop), 1♀; Lae, December 10–12, 1964 (Bacchus; BMNH), 3♂♂, 1♀; Wau, 1100–1300 m., January–December, light trap (Sedlacek, Scudder; Bishop), 7♂♂, 28♀♀. *New Ireland Prov.:* New Ireland (SW), "Camp Bishop," 15 km. up Kait River, 125 m., July 7, 1956, light trap (Gressitt; Bishop), 1♂. *Northern Prov.:* Kokoda, 400 m., November 15–20, 1965, light trap (Sedlacek; Bishop), 12♂♂, 8♀♀. *West Sepik Prov.:* Feramin, 1450 m., August 24, 1963 (Straatman; Bishop), 7♀♀. [*Prov. unknown*]: Peria Creek, Kwagira River, 50 m., August 14–September 6, 1953 (Tate; AMNH), 1♂.

DISCUSSION: *Decomia notata* is the only known species which has the longitudinal markings on either side of the midline of the scutellum. Although these are not present in all specimens, the range of variation encountered in specimens with the markings suggests one species is involved. Also the vesica of the male with the generally serrate margin



FIGS. 1152–1160. *Decomia notata* (New Guinea). 1152. Vesica. 1153. Phallotheca. 1154. Left paramere. 1155. Vesica. 1156. Phallotheca. 1157. Left paramere. 1158. Vesica. 1159. Phallotheca. 1160. Left paramere.

of the terminal membranous elaboration suggests one rather widespread species, even though some structural variation in the vesica does exist (compare figs. 1152, 1155, and 1158).

Decomia papuensis, new species

Figures 1063, 1150, 1164, 1165

DIAGNOSIS: Most similar to *malayensis* and *tenompokensis* from which it can be separated by the fact that the second antennal segment is darkened only on the extreme distal portion; generally recognized by its relatively large size, yellowish coloration, and weakly contrasting reddish markings at the apex of the corium and cuneus, in addition to the antennal character mentioned above, and the form of the male genitalia (figs. 1164, 1165).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.63, width pronotum 0.98; basic coloration of body and appendages yellow-tan with the following exceptions: extreme distal portion of antennal segment two and antennal segments three and four appearing somewhat darker than basic coloration; posterior margin of corium reddish; extreme apex of cuneus dark brown.

Basic structure, surface texture and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1164 and 1165.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrences in Papua New Guinea.

DISTRIBUTION: Figure 1063. New Guinea, Bismarck Archipelago, and the Solomon Islands.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Kratke Mountains, Arau in the upper Wanton River valley, 1400 m., Camp No. 11 (Sixth Archbold Expedition), October 18–22, 1959, L. J. Brass collector; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype (AMNH), 12♂♂, 3♀♀. INDONESIA: *West Irian:* 4 km. E of Hol Maffen, Tor River mouth, July 19, 1959 (Maa; Bishop), 2♂♂, 2♀♀; Hollandia area, Cyclops Mountains W of Sentani, 50–100 m., June 22–24, 1959, light trap (Maa; Bishop), 3♂♂; Sentani, SW of Cyclops, 100 m., June 15, 1959, MV light trap (Gressitt and Maa; Bishop), 1♂, 1♀; W of Sentani, June 24–25, 1959, MV light trap (Gressitt and Maa; Bishop), 1♀; Hollandia, 100 m., July 27, 1955, light trap (Gressitt; Bishop), 1♀; Sarmi, July 20–23, 1959, MV light trap (Maa; Bishop), 1♀. PAPUA NEW GUINEA: *Bougainville Prov.:* Bougainville Island, Kieta, June 12, 1956, light trap (Gressitt; Bishop), 1♂; Bougainville Island, Sohano, June 13, 1956, light trap (Gressitt; Bishop), 1♂. *Central Prov.:* Mamai Plantation E of Port Glasgow, 150 m., February 6, 1965, light trap (Straatman; Bishop), 5♂♂, 3♀♀; Kokoda, 400 m., November 16–20, 1965, light trap (Sedlacek; Bishop), 14♂♂, 9♀♀. *East New Britain Prov.:* Gazelle Peninsula, Bainings, St. Paul's, 350 m., September 4–8, 1955 (Gressitt; Bishop), 2♂♂. *Eastern Highlands Prov.:* Kainantu, 1650 m., October 20–26, 1959, MV light trap (Maa; Bishop), 9♂♂, 16♀♀. *Madang Prov.:* Adelbert Mountains, Wanuma, 800–1000 m., October 23, 1958, light trap (Gressitt; Bishop), 1♂; Finisterre Range, Saidor, Matoko, August 29–September 5, 1958 (Brandt; Bishop), 1♂; 11.2 km. N of Bulolo, 600 m., March 11, 1962 (Sedlacek; Bishop), 1♂. *Morobe Prov.:* Umi River, Markham Valley, 480 m., November 19, 1962 (Brass; AMNH), 1♂; Wau, Hospital Creek, 1200 m., January 18, 1965, light trap (Sedlacek; Bishop), 1♂; Wau, 1100–1300 m., January–September, MV light trap (Sedlacek; AMNH, Bishop), 39♂♂, 49♀♀; Wau, Mt. Missim, 1320 m., February 2, 1963 (Sedlacek; Bishop), 1♀; Nami Creek, 6 km. W of Wau, 1700 m., June 10, 1962, malaise trap (Sedlacek; Bishop), 1♂; Lae, at head of Huon Gulf near mouth of Markham River, 0–5 m., October 7–19, 1959 (L. J. Brass; AMNH), 1♂; Edie Creek, 2050–2350 m., April 1956 (Gressitt; Bishop), 11♂♂, 20♀♀. SOLOMON ISLANDS: *Guadalcanal:* Honiara, October 4–8, 1953 (Bradley; BMNH), 1♂.

ADDITIONAL SPECIMENS: PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Kainantu, 1650 m., October 20–26, 1959, MV light trap (Maa; Bishop), 1♂, 7♀♀. *Morobe Prov.:* Wau, 1200–1250 m. (Sedlacek; AMNH, Bishop), 28♂♂, 6♀♀; Wau, Mt. Missim, 1400–1600 m., December 28, 1964 (Sedlacek), 1♂; 11.2 km. N of Bulolo, 600 m., March 11, 1962 (Sedlacek; Bishop), 1♀; Edie Creek, 2050–2300 m., March 31, 1956 (Gressitt; Bishop), 3♂♂, 2♀♀. *Northern Prov.:* Kokoda, 400 m., November 15–20, 1965, light trap (Sedlacek; Bishop), 1♂; Kokoda, 1200 feet, September 1933 (Cheesman; BMNH), 2♀♀.

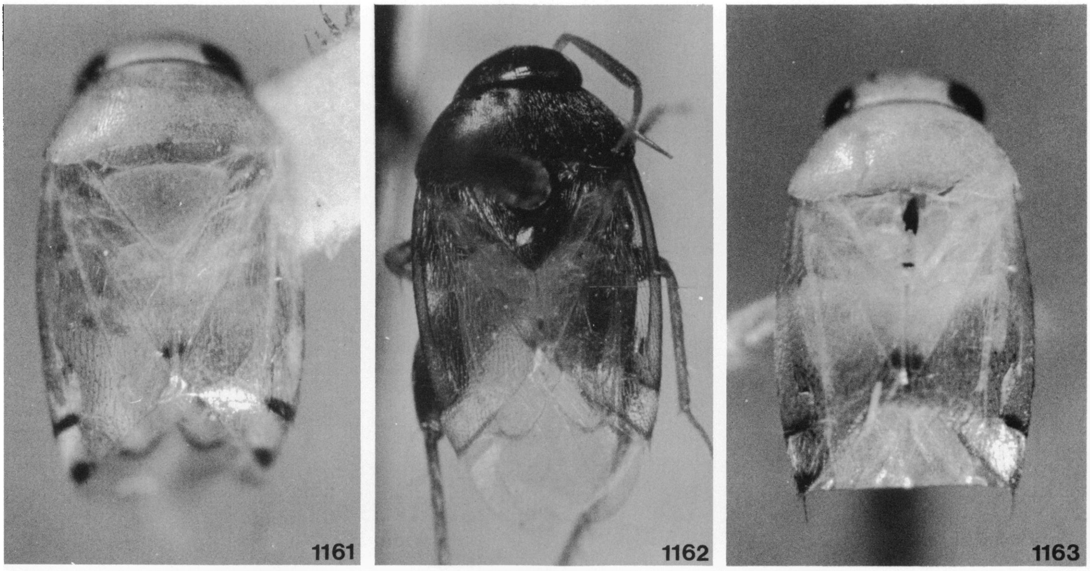
DISCUSSION: Some individuals are listed as additional specimens, because although in most cases they were from localities of designated paratypes, the antennae were missing and accurate identification of females was impossible and would have required dissection of all males.

Decomia parva, new species

Figures 1061, 1151, 1166–1168

DIAGNOSIS: Recognized by the combination of characters given in the key, belonging to a group of small species in which the membranous terminal elaboration of the vesica is directed to the right; male genitalia as in figures 1166–1168.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.40, width pronotum 0.80; basic coloration rather variable yellow-brown; mesoscutum, scutellum, and anterior one-third of pronotum somewhat dark brown, strongly suffused with red distally; abdomen dark brown sublaterally, laterally strongly suffused with red; apex of genital segment nearly black; antennal segments three and four and posterior one-third of veins of membrane suffused with brown; posterior margin of corium along cuneal fracture



FIGS. 1161–1163. *Decomia* spp. 1161. *D. pedunculata,* holotype. 1162. *D. pendleburyi,* holotype. 1163. *D. perparvula,* holotype.

broadly, and posterior one-third of cuneus, nearly black.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1166–1168.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its small size; from the Latin *parva,* rather small.

DISTRIBUTION: Figure 1061. Philippine Islands and by tentative identification from Malaya.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Camarines Sur, Mt. Isarog, 500–600 m., April 13, 1963, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 5♂♂, 2♀♀. PHILIPPINE ISLANDS: *Luzon:* Camarines Sur, Mt. Isarog, 20 km. E of Naga, 500–600 m., April 12, 1963 (Torrevillas; Bishop), 6♂♂, 3♀♀; Mountain Prov., Liwo, 8 km. E of Mayoyao, 1000–1300 m., June 2–12, 1967, light trap (Torrevillas; Bishop), 2♂♂, 3♀♀; Mountain Prov., Abatan, Buguias, 60 km. S of Bontoc, 1800–2000 m., June 8–18, 1964, light trap (Torrevillas; Bishop), 4♀♀. *Negros Island:* Camp Lookout, Dumaguete, February 15–April 15, 1961 (Schneirla and Reyes; AMNH), 4♂♂, 2♀♀.

ADDITIONAL SPECIMEN: MALAYSIA: *Malaya:* Pahang, Cameron Highlands, Mt. Brichang, 2030 m., January 1–9, 1959, at light (Quate; Bishop), 1♀.

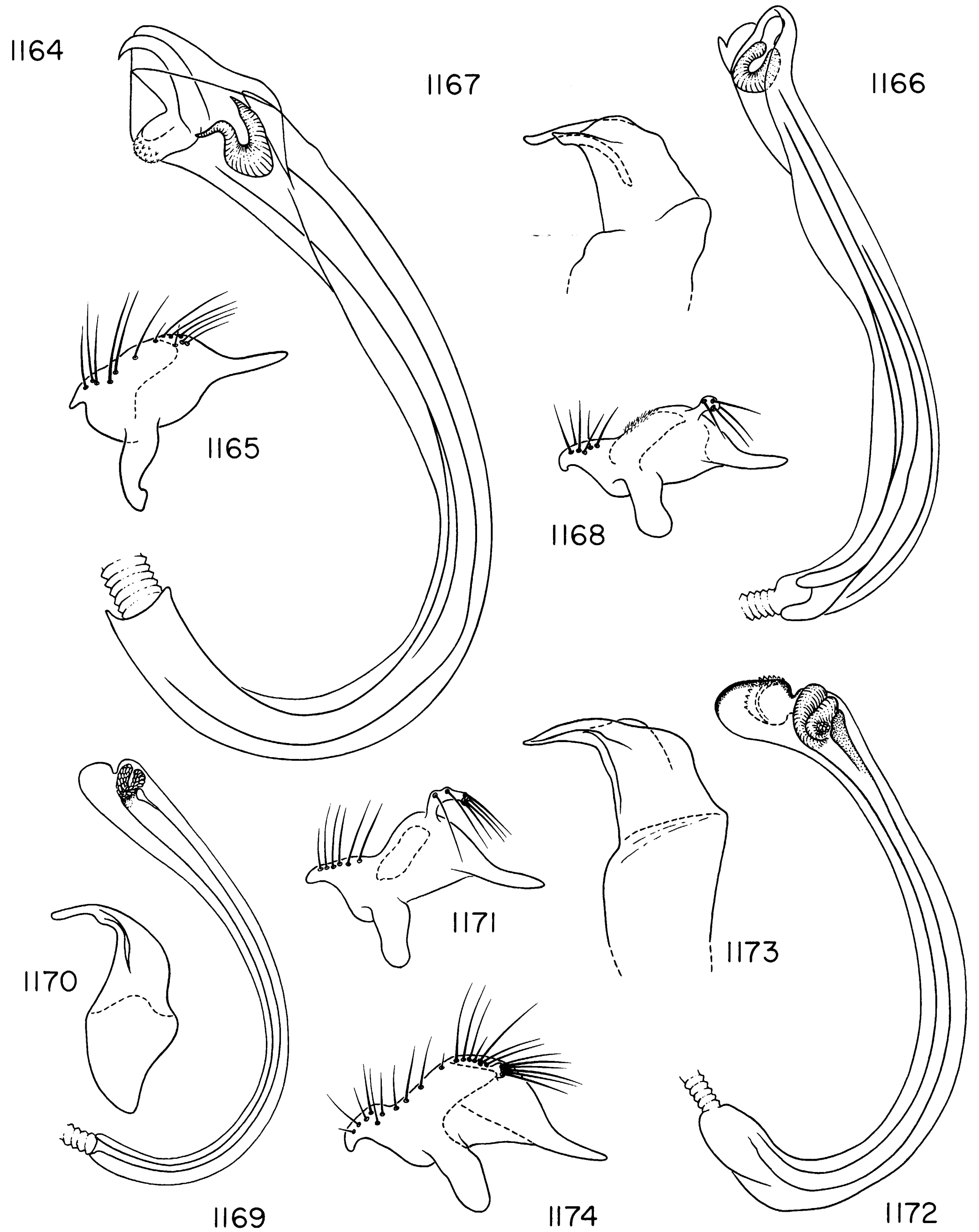
DISCUSSION: This species rather closely resembles *notata,* but is smaller and more heavily suffused with red in available specimens. Also the vesicae in the males of the two species are very different.

Decomia pedunculata, new species

Figures 1063, 1161, 1169–1171

DIAGNOSIS: Recognized by the combination of characters given in the key, and among known species especially by the elongate peduncle on the posterior process of the left paramere. Belongs to a group of small light-colored species in which the membranous terminal elaboration of the vesica is oriented to the left; male genitalia as in figures 1169–1171.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.25, width pronotum 0.75; basic coloration yellow-tan except as follows: extreme apex of clavus, apex of



FIGS. 1164–1174. *Decomia* spp. 1164, 1165. *D. papuensis*. 1164. Vesica. 1165. Left paramere. 1166–1168. *D. parva*. 1166. Vesica. 1167. Phallotheca. 1168. Left paramere. 1169–1171. *D. pedunculata*. 1169. Vesica. 1170. Phallotheca. 1171. Left paramere. 1172–1174. *D. pendleburyi*. 1172. Vesica. 1173. Phallotheca. 1174. Left paramere.

corium along cuneal fracture more or less broadly, and posterior two-fifths of cuneus dark brown; posterior one-half of veins of membrane suffused with brown; extreme distal portion of metafemora above tibiofemoral articulation dark brown.

Basic structure, surface texture, and vestiture as in generic description; posterior femora moderately enlarged.

MALE GENITALIA: Figures 1169–1171.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the peduncle on which the setae of the posterior process of the left paramere are situated; from the Latin *pedunculus,* diminutive of *pes,* foot.

DISTRIBUTION: Figure 1063. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Morobe Prov.:* Markham Valley, Umi River, 480 m., collecting camp No. 14, November 19, 1959, L. J. Brass collector; deposited in the American Museum of Natural History, New York.

DISCUSSION: Of all the species of *Decomia* with a peduncle on the posterior process of the left paramere on which some or all the setae are situated, the structure reaches its greatest degree of development in *pedunculata.* Superficially, however, it is nearly impossible to separate this species from the other small light-colored ones.

Decomia pendleburyi, new species

Figures 1061, 1162, 1172–1174

DIAGNOSIS: The species belongs to a group with a black pronotum, scutellum, profemora, and meso- and meta-femora. It differs from *torrevillasi,* which it most closely resembles, in having antennal segments three and four light in color. The male genitalia are also diagnostic for the species (figs. 1172–1174).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.88, width pronotum 1.18; basic coloration dark brown or castaneous, with the following exceptions: costal margin of corium and cuneus, and posterior margin of corium along cuneal fracture, as well as posterior margin of cuneus, outlined in deep red-brown; posterior one-third of vein of membrane suffused with brown; extreme apex of clavus red-brown; antennal segment one and proximal two-thirds of antennal segment two slightly lighter than dark brown distal portion on antennal segment two; antennal segments three and four light; pro- and meso-tibiae and tarsi light brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora greatly enlarged.

MALE GENITALIA: Figures 1172–1174.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for H. M. Pendlebury.

DISTRIBUTION: Figure 1061. Malaya.

HOLOTYPE ♂: MALAYSIA: *Malaya:* Kuala Lumpur, April 30, 1932, H. M. Pendlebury collector; deposited in British Museum (Nat. Hist.).

Decomia perparvula, new species

Figures 1163, 1178–1180

DIAGNOSIS: With *Decomia microgonoporos, perparvula* is among the smallest known species in the genus; recognized by its size, nearly white coloration, and the form of the vesica in the male, which has a very limited terminal membranous elaboration (fig. 1178).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.13, width pronotum 0.70; basic coloration nearly white with the following exceptions: hemelytra subhyaline, extreme apex of clavus, apex of corium along cuneal fracture, apex of cuneus, and metafemora distally at tibiofemoral articulation dark brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1178–1180.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

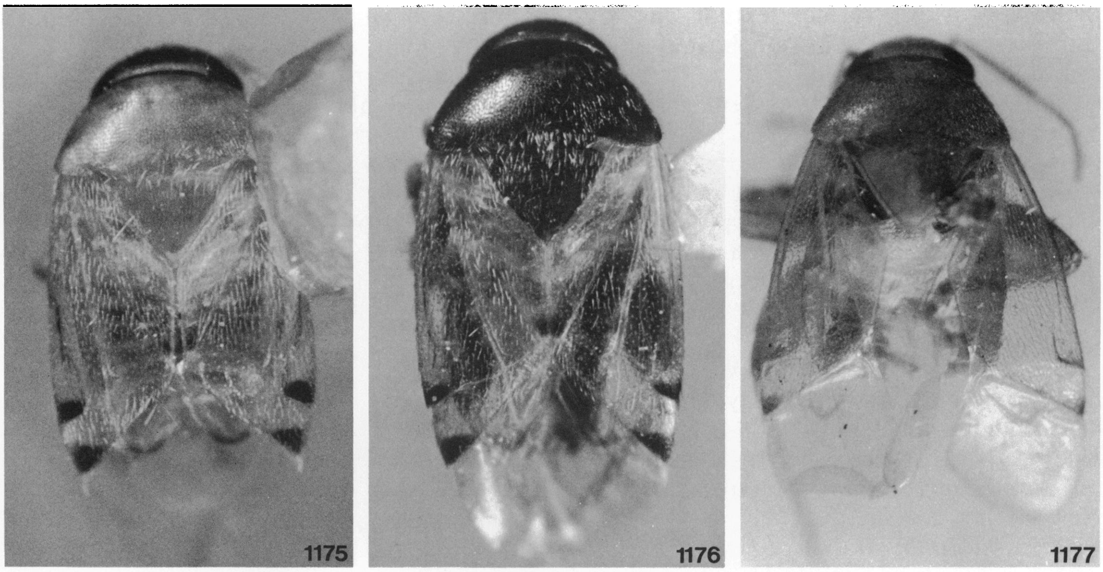
ETYMOLOGY: Named for its being the smallest known species of the genus; from the Latin *perparvula,* very small.

DISTRIBUTION: Bismarck Archipelago, Lavongai Island.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Bismarck Islands:* Lavongai, Banatam, March 20, 1962, MV light, collected on Noona Dan Expedition; deposited in University Zoological Museum, Copenhagen.

ADDITIONAL SPECIMEN: Same data as holotype (Copenhagen), sex undetermined.

DISCUSSION: In general appearance, with its almost white subhyaline coloration, and the form of the male genitalia, *perparvula* stands somewhat apart from other known species of *Decomia.* I have not been able to identify the



FIGS. 1175–1177. *Decomia* spp. 1175. *D. pisina,* holotype. 1176. *D.* near *samoanus,* ♂, Malaysia, Sabah Prov., Tenompok. 1177. *D. srilankensis,* holotype.

type locality on available maps, so have transcribed the data exactly as they appear on the label.

Decomia pisina, new species
Figures 1061, 1175, 1181–1183

DIAGNOSIS: Recognized by the characters given in the key, especially the small size, and by the form of the male genitalia in which the terminal membranous elaboration of the vesica is oriented to the left and the setae on the posterior process of the left paramere are not situated on a peduncle (figs. 1181–1183).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.39, width pronotum 0.84; basic coloration light yellow-tan with the following exceptions: vertex and most of frons, bucculae, and ventral margin of propleuron brown; apical margin of corium and apical one-half (as measured along cuneal margin) of cuneus nearly black; posterior one-third of veins of membrane brown; genital segment strongly suffused with red, apical one-half nearly black; distal one-fourth of metafemur strongly suffused with red.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1181–1183.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its small size; from the Latin *pisina,* small.

DISTRIBUTION: Figure 1061. Java.

HOLOTYPE ♂: INDONESIA: *Java:* Bogor Botanical Garden, August 3, 1964, light trap, M. Delfinado collector; deposited in the B. P. Bishop Museum, Honolulu.

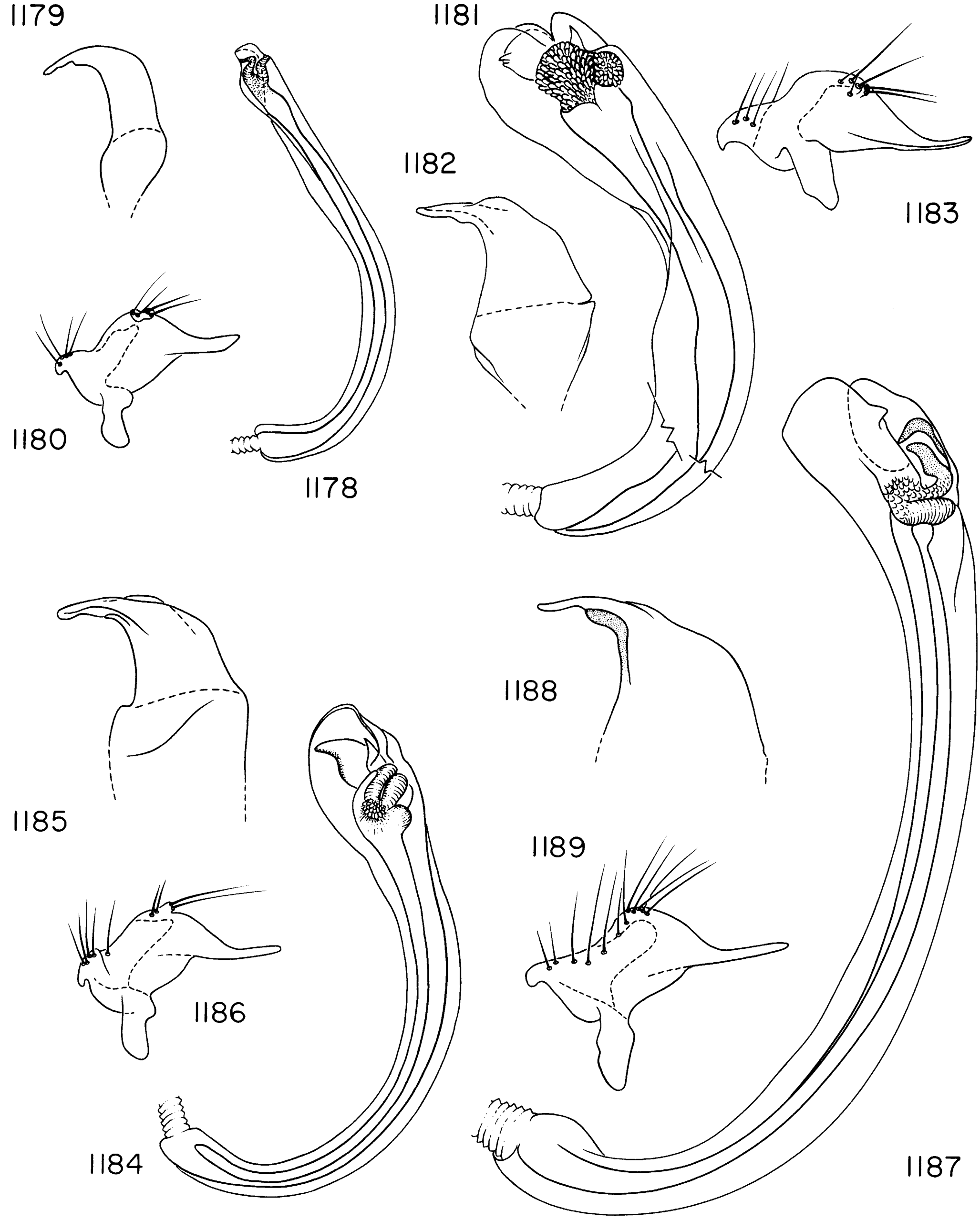
PARATYPES: Same data as holotype (AMNH, Bishop), 4♂♂, 1♀.

Decomia samoanus (Knight),
new combination
Figure 1064

Torma samoanus Knight, 1935, p. 198.

DIAGNOSIS: Recognized by the combination of characters given in the key (see also discussion under *Decomia* near *samoanus*).

DESCRIPTION: Macropterous female. Length apex tylus-cuneal fracture 1.38, width pronotum 0.83; frons, vertex (except posterior margin), pronotum, mesoscutum (except laterally), scutellum, extreme apex of clavus, apex of corium along cuneal fracture broadly, posterior one-third of cuneus, thoracic pleura, meso- and meta-coxae, and metafemora dark



FIGS. 1178–1189. *Decomia* spp. 1178–1180. *D. perparvula.* 1178. Vesica. 1179. Phallotheca. 1180. Left paramere. 1181–1183. *D. pisina.* 1181. Vesica. 1182. Phallotheca. 1183. Left paramere. 1184–1186. *D.* near *samoanus.* 1184. Vesica. 1185. Phallotheca. 1186. Left paramere. 1187–1189. *D. srilankensis.* 1187. Vesica. 1188. Phallotheca. 1189. Left paramere.

brown; posterior one-third of veins of membrane suffused with brown; frons at and below level of antennal fossae light brown; bucculae nearly black; antennae, procoxae, pro- and meso-femora, and all tibiae and tarsi nearly white.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

FEMALE GENITALIA: Not examined. See generic discussion.

MALE: Unknown.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 1064. American Samoa.

SPECIMEN EXAMINED: AMERICAN SAMOA: *Tutuila:* Leone Road, March 24, 1926 (Judd; Bishop), 1♀ (holotype).

DISCUSSION: Because this species is known only from the holotype female, nothing can be said about the male genitalia, characters which have proved to be invaluable in separating most known species of *Decomia.* It is apparent, however, that *samoanus* is a member of the genus *Decomia,* of which *Torma* is a generic synonym, thus the new combination *Decomia samoanus.*

Superficially, *samoanus* most closely resembles specimens known from northern Borneo; these are discussed below under *Decomia* near *samoanus,* and run with *samoanus* in the key.

Decomia near *samoanus* (Knight)

Figures 1061, 1176, 1184–1186

DIAGNOSIS: Separated from known species (except *samoanus*) by the combination of characters given in the key.

MALE GENITALIA: Figures 1184–1186.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 1061. Java and northern Borneo.

SPECIMENS EXAMINED: INDONESIA: *Java:* Bogor, Botanical Garden, August 3, 1964, light trap (Delfinado; AMNH, Bishop), 1♂, 1♀. MALAYSIA: *Sabah:* Tenompok, February 10–19, 1959 (Maa; Bishop), 1♀; Tenompok, Mt. Kinabalu, October 18, 1958 (Maa; Bishop), 1♀; Tenompok, 48 km. E of Kota Kinabalu, 1460 m., February 10–19, 1959 (Maa; Bishop), 1♀. *Sarawak:* Kuching, Matang, 450–894 m., September 15, 1958, MV light trap (Gressitt and Maa; AMNH, Bishop), 1♂, 2♀♀; Bau District, Bidi, 90–240 m., September 3, 1958 (Maa; AMNH), 1♀.

DISCUSSION: Comparison of the specimens listed above with the holotype of *Decomia samoanus* Knight indicates that they are at least superficially very similar. Because males of *samoanus* are not available for dissection I have refrained from describing the specimens listed as "near *samoanus*" at this time. The distribution including Samoa and Malaysia and Indonesia, however, suggests strongly that more than one species is involved.

In order to make future comparisons and assessments easier I have included illustrations of the male genitalia and measurements of "near *samoanus.*"

Decomia srilankensis, new species

Figures 1177, 1187–1189

DIAGNOSIS: A member of a group of large-sized species with predominantly reddish markings, *srilankensis* can be recognized by the combination of characters given in the key and the form of the male genitalia (figs. 1187–1189).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.56, width pronotum 0.93; basic coloration dirty yellow; apex of corium along cuneal fracture and apical one-fourth of cuneus reddish to brown; extreme distal portion of metafemora darkened with reddish or brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1187–1189.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in Sri Lanka.

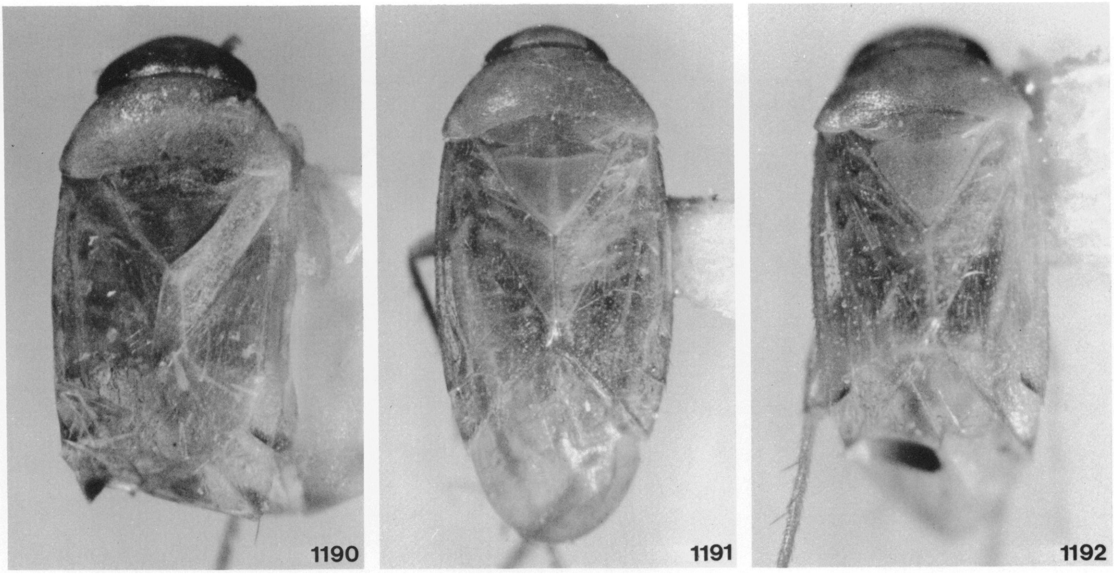
DISTRIBUTION: Sri Lanka.

HOLOTYPE ♂: SRI LANKA: Peradeniya, March 1902; deposited in the British Museum (Nat. Hist.).

Decomia sumatrana, new species

Figures 1061, 1190, 1193–1195

DIAGNOSIS: Recognized by the combination of characters given in the key, especially by the orientation of the terminal membranous elaboration of the vesica and the presence of a peduncle on the posterior process of the left paramere (figs. 1193–1195), the small size, and the light coloration.



FIGS. 1190–1192. *Decomia* spp. 1190. *D. sumatrana,* holotype. 1191. *D. tenompokensis,* ♂, Malaysia, Sabah Prov., Tambunan. 1192. *D. terminalis,* holotype.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.47, width pronotum 0.85; basic coloration very light yellow-brown with the following exceptions: apex of corium along cuneal fracture broadly, and posterior one-third of cuneus dark brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora strongly enlarged.

MALE GENITALIA: Figures 1192–1195.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on the island of Sumatra.

DISTRIBUTION: Figure 1061. Sumatra.

HOLOTYPE ♂: INDONESIA: *Sumatra:* Dolok Merangir, April 1971, Diehl collector; deposited in the American Museum of Natural History, New York.

Decomia tenompokensis, new species

Figures 1061, 1191, 1196–1198

DIAGNOSIS: Member of a group of rather large, light-colored species with primarily reddish markings; most easily confused with *malayensis,* from which it can be separated by having only the distal one-third of antennal segment two black. The form of the male genitalia is also diagnositic (figs. 1196–1198).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.73, width pronotum 0.95; general coloration light yellow-brown or yellow-tan with the following exceptions: distal one-third of antennal segment two castaneous, antennal segments three and four appearing somewhat darker than basic body coloration; apical margin of corium and apical margin of cuneus red.

Basic structure, surface texture and vestiture as in generic description; posterior femora strongly enlarged.

MALE GENITALIA: See figures 1196–1198.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

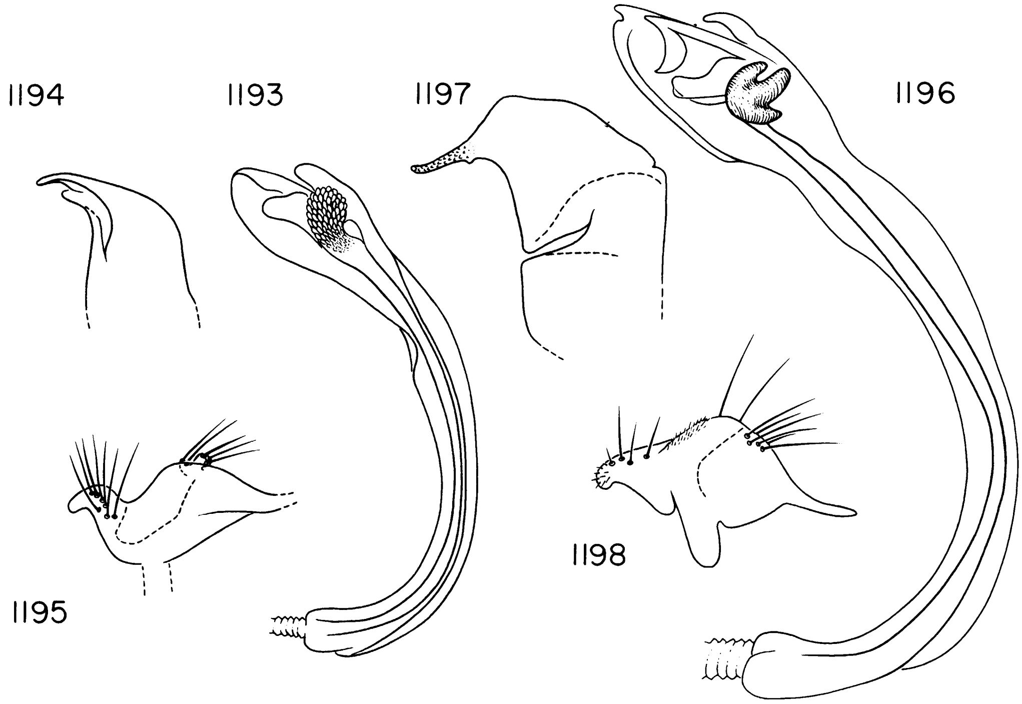
MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the type locality.

DISTRIBUTION: Figure 1061. Philippine Islands and northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah:* West Coast Residency, Tenompok, February 13, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but February 10–19, 1959 (AMNH, Bishop), 25♂♂, 61♀♀. MALAYSIA: *Sabah:* Interior Residency, Tambunan, January 8, 1959 (Maa; Bishop), 2♀♀; West Coast Residency, Ranau, September 30–October 5, 1958 (Maa; Bish-



FIGS. 1193–1198. *Decomia* spp. 1193–1195. *D. sumatrana.* 1193. Vesica. 1194. Phallotheca. 1195. Left paramere. 1196–1198. *D. tenompokensis.* 1196. Vesica. 1197. Phallotheca. 1198. Left paramere.

op), 3♂♂, 3♀♀; Tenompok, 48 km. E of Jesselton, 1460 m., February 10–19, 1959 (Maa; Bishop), 1♀. *Sarawak:* Bau, Lake Area, August 29–30, 1958 (Maa; Bishop), 1♀; Bau District, Bidi, 90–240 m., September 3, 1958 (Maa; Bishop), 2♀♀; Nanga Pelagus near Kapit, 180–585 m., August 7–14, 1958 (Maa; Bishop), 1♀.

ADDITIONAL SPECIMENS: PHILIPPINE ISLANDS: *Leyte:* Abuyog, 35 mi. S of Tacloban, July 5–8, 1961 (AMNH), 1♀. *Luzon:* Camarines Sur, Mt. Isarog, 20 km. E of Naga, 500–600 m., April 12, 1963 (Torrevillas; Bishop), 1♀; Mountain Prov., Liwo, 8 km. E of Mayoyao, 1000–1300 m., April 13, 1967, light trap (Torrevillas; Bishop), 1♀; Mountain Prov., Mayoyao, Ifugao, 1200–1500 m., August 5–9, 1966, light trap (Torrevillas; Bishop), 1♀. *Negros Island:* Dumaguete, Camp Lookout, 1300 feet, February 15–April 15, 1961 (Schneirla and Reyes; AMNH), 1♂.

DISCUSSION: See discussion under *Decomia malayensis.*

Decomia terminalis, new species

Figures 1063, 1192, 1199–1205

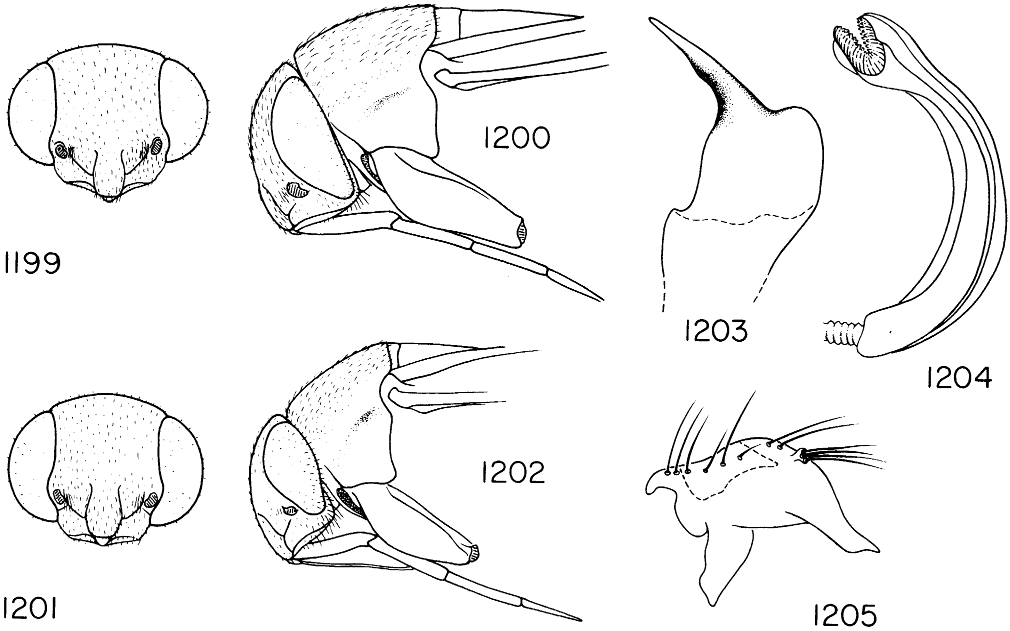
DIAGNOSIS: Recognizable by the form of the male genitalia (figs. 1203–1205), the secondary gonopore located apically on the vesica and opening distally, and the weakly enlarged metafemora (see also discussion under *microgonoporos*); general appearance similar to *notata* and other small species.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.20, width pronotum 0.74; basic coloration light yellow-tan; apex of corium along cuneal fracture, extreme apex of cuneus, and apex of genital capsule dark brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora not noticeably enlarged.

MALE GENITALIA: Figures 1203–1205.

FEMALE: Macropterous. Basic structure as in males; head, pronotum, and scutellum strongly orangish, abdomen almost totally dark brown, in contrast to yellow-tan in males.



FIGS. 1199–1205. *Decomia terminalis.* 1199. Frontal view of head, ♂. 1200. Lateral view of head and prothorax, ♂. 1201. Frontal view of head, ♀. 1202. Lateral view of head and prothorax, ♀. 1203. Phallomere. 1204. Vesica. 1205. Left paramere.

FEMALE GENITALIA: Posterior wall simple.

MEASUREMENTS: See Appendix.

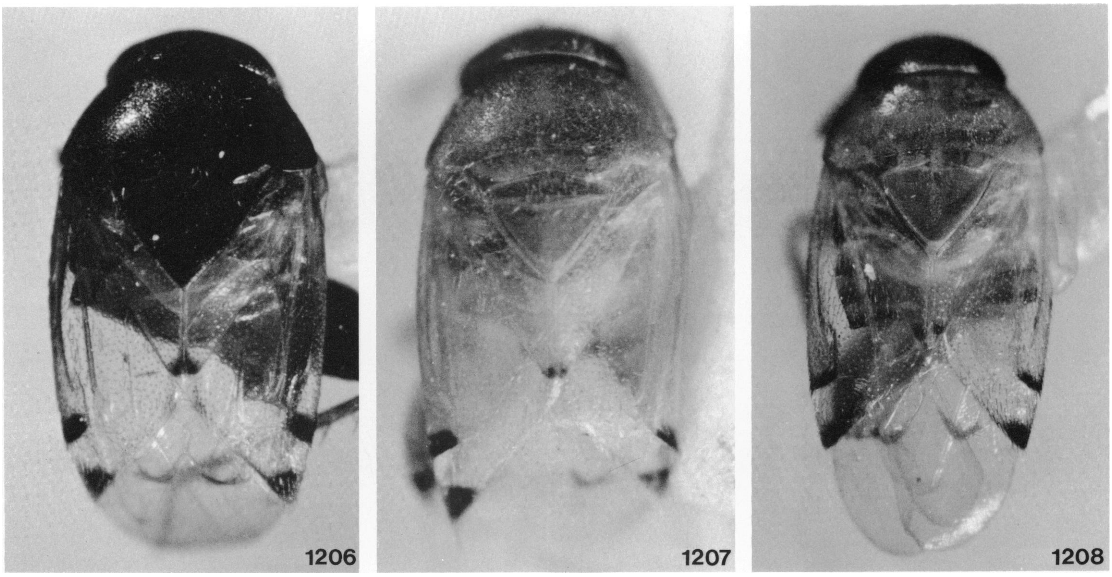
ETYMOLOGY: Named for the terminal secondary gonopore in the males; from the Latin, *terminalis.*

DISTRIBUTION: Figure 1063. New Guinea.

HOLOTYPE ♂: INDONESIA: *West Irian:* Sentani, ±50 m., June 15, 1959, MV light trap, J. L. Gressitt collector; deposited in B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 5♀♀. INDONESIA: *West Irian:* Hol Maffen, 22 km. E of Sarmi, July 1–19, 1959 (Maa; AMNH, Bishop), 4♂♂, 41♀♀; 4 km. E of Hol Maffen, Tor River mouth, July 19, 1959 (Maa; Bishop), 3♂♂, 12♀♀; Sentani, July 20–24, 1959, light trap (Gressitt; Bishop), 2♂♂, 3♀♀; Sentani, SW of Cyclops, 100 m., June 15, 1959, MV light trap (Gressitt and Maa; Bishop), 4♀♀; Cyclops Mountains, W of Sentani, 50–100 m., June 22–24, 1959, light trap (Maa; Bishop), 12♀♀; Sarmi, July 20–23, 1959, MV light trap (Maa; Bishop), 1♂, 3♀♀; Vogelkop, Kebar Valley W of Manokwari, 550 m., January 4–31, 1962, light trap (Quate; Bishop), 1♀; Nabire S of Geelvink Bay, September 13, 1962, light trap in jungle (Holtmann; Bishop), 1♀; Japen Island, Dawai River SSE of Sumberbaba, October 19, 1962, light trap in jungle (Holtmann; Bishop), 1♀. PAPUA NEW GUINEA: *Central Prov.:* Mamai Plantation E of Port Glasgow, 150 m., February 5, 1965, light trap (Straatman; Bishop), 1♂, 1♀. *Eastern Highlands Prov.:* Kratke Mountains, Arau Valley of Upper Wanton River, 1400 m., October 10–20, 1959 (Brass; AMNH), 1♀. *Madang Prov.:* Adelbert Mountains, Wanuma, 800–1000 m., October 24, 1958 (Gressitt; Bishop), 2♀♀. *Morobe Prov.:* Gurakor, Wampit River Valley, 14 mi. from Lae, 670 m., May 5–8, 1959 (Brass; AMNH), 1♀; Wau, 1100–1300 m., July 1968 (Sedlacek; Bishop), 1♀. *Northern Prov.:* Kokoda, 400 m., November 15–20, 1965, light trap (Sedlacek; Bishop), 3♀♀.

DISCUSSION: This species can be tentatively identified by the weakly enlarged metafemora (see also *microgonoporos*); positive identification of *terminalis* is made easily by the



FIGS. 1206–1208. *D.* spp. 1206. *D. torrevillasi,* holotype. 1207. *D. tytthos,* holotype. 1208. *D. vergrandis,* holotype.

form and location of the secondary gonopore in the males. This is the only known species where an apparent sexual dimorphism in coloration exists. The known male specimens are all light yellow-tan, with mostly light abdomens. Known females have the head, pronotum, and scutellum strongly orangish, and superficially look much like specimens of *microgonoporos,* except for overall size and the coloration of the metafemora.

Decomia torrevillasi, new species

Figures 1061, 1206, 1209–1211

DIAGNOSIS: As a member of a group of species with black pronotum, scutellum, coxae, and femora, *torrevillasi* can be recognized by the second antennal segment being black on the distal one-third in combination with the form of the male genitalia (figs. 1209–1211).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.73, width pronotum 1.05; basic coloration black with the following exceptions: antennal segment one and proximal one-half of antennal segment two reddish; meso- and meta-femora distally, all tibiae, and tarsi reddish; hemelytra hyaline with some dark suffusion, particularly along costal margin; extreme apex of clavus, apex of corium broadly along cuneal fracture, and posterior one-half of cuneus black; posterior one-fourth of veins of membrane suffused with black.

Basic structure, surface texture, and vestiture as in generic description; posterior femora strongly enlarged.

MALE GENITALIA: Figures 1209–1211.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for H. M. Torrevillas.

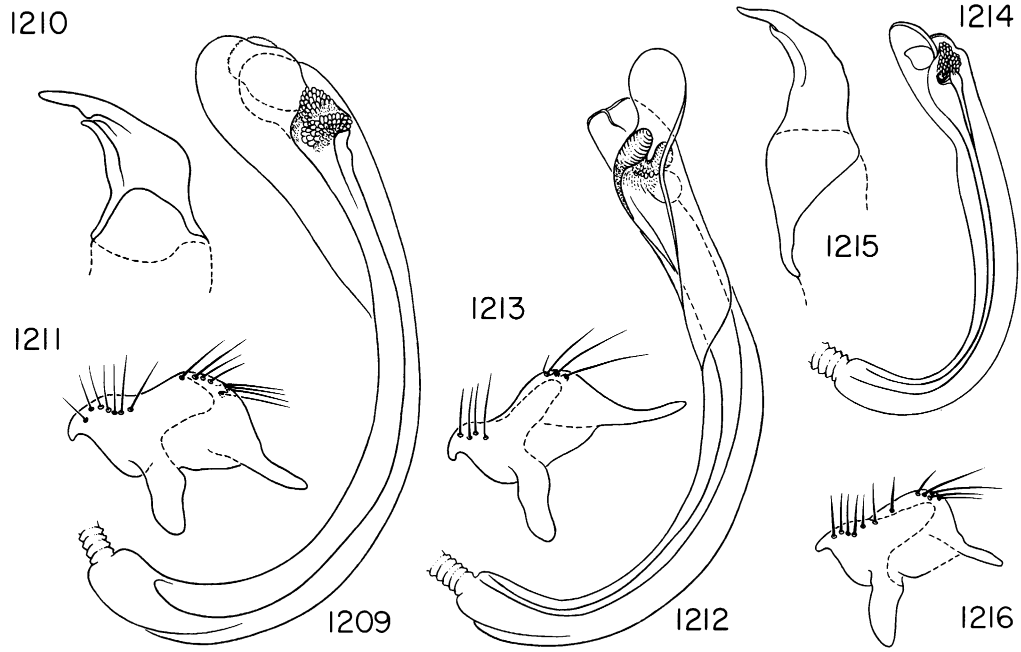
DISTRIBUTION: Figure 1061. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Mountain Prov., Abatan, Buguias, 60 km. S of Bontoc, 1800–2000 m., May 22–31, 1964, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

Decomia tytthos, new species

Figures 1061, 1207, 1212, 1213

DIAGNOSIS: Recognized by the combination of characters given in the key, especially as one of the small light-colored species, by the form of the male genitalia in which the terminal membranous elaboration of the vesica is oriented to the right (fig. 1212).



FIGS. 1209–1216. *Decomia* spp. 1209–1211. *D. torrevillasi.* 1209. Vesica. 1210. Phallotheca. 1211. Left paramere. 1212, 1213. *D. tytthos.* 1212. Vesica. 1213. Left paramere. 1214–1216. *D. vergrandis.* 1214. Vesica. 1215. Phallotheca. 1216. Left paramere.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.40, width pronotum 0.80; basic coloration dirty yellow with the following exceptions: extreme apex of clavus, apex of corium along cuneal fracture very broadly, posterior one-half of cuneus as measured along costal margin, and apex of genital segment black; apex of labium suffused with brown; distal one-third of metafemora suffused with red, especially strongly around tibiofemoral articulation.

Basic structure, surface texture, and vestiture as in generic description; metafemora moderately enlarged.

MALE GENITALIA: Figures 1212 and 1213; phallotheca mutilated in dissection.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its small size; from the Greek *tytthos,* small.

DISTRIBUTION: Figure 1061. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah:* West Coast Residency, Tenompok, February 15, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

Decomia vergrandis, new species

Figures 1063, 1208, 1214–1216

DIAGNOSIS: Recognized by the combination of characters given in the key, especially the structure of the male genitalia, in which the terminal membranous elaboration of the vesica is oriented to the left and the setae of the posterior process of the left paramere are not situated on a peduncle (figs. 1214–1216).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.33, width pronotum 0.80; basic coloration dirty yellow except as follows: extreme apex of clavus, apex of corium along cuneal fracture, apical one-third of cuneus, apex of labium, and metafemora distally around tibiofemoral articulation dark brown; posterior one-third of veins of membrane suffused with brown.

Basic structure, surface texture, and vestiture as in generic description; metafemora greatly enlarged.

MALE GENITALIA: Figures 1214–1216.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its small size; from the Latin *vergrandis,* small.

DISTRIBUTION: Figure 1063. New Britain.

HOLOTYPE ♂: PAPUA NEW GUINEA: *East New Britain Prov.:* New Britain, Gazelle Peninsula, Bainings, St. Paul's, 350 m., September 4, 1955, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 1♂, 1♀.

DECOMIOIDES, NEW GENUS

DIAGNOSIS: *Decomioides* most closely resembles *Decomia* in body form, including the ovate outline, rounded frons (including the eyes) (figs. 1219–1224), and the conspicuously enlarged metafemora (fig. 1236), dorsum with only a single type of pubescence, neither so strongly appressed nor neatly arranged as in *Decomia*; hemelytra translucent rather than hyaline or subhyaline, with no conspicuous marking at the apex of the corium and cuneus as found in most *Decomia* species, although the cuneus contrasting colored with the corium; membrane infumate rather than transparent; pulvilli small and on ventral surface in contrast to the large flabellate type found in *Decomia*; vesica is characteristic forming a single somewhat distorted coil (but see *pulla*), having a well-developed anteapical secondary gonopore in the form of an ellipse, and with a unique, generally elongate more or less parallel-sided spicule (rod) arising proximal to the secondary gonopore and extending to about the apex of the vesica (figs. 1225–1227).

DESCRIPTION: Macropterous male. Small, elongate, ovate, in dorsal view, range length apex tylus-cuneal fracture 1.05–1.58, range width pronotum 0.67–0.90; body surface smooth to very weakly rugulose, dull; body, including abdominal venter, covered with a single type of semi-appressed pubescence about the length of tibial diameter; anterolateral angles of pronotum with a slender erect spine about the length of tibial diameter; antennae with reclining pale pubescence no longer than diameter of antennal segment; femora clothed with neat, reclining, semi-appressed, short, pale pubescence; dorsal surface of all femora with two (one pair) of anteapical semierect spines and a pair of shorter spines apically; all tibiae with scattered nearly erect spines somewhat longer than tibial diameter, several rows of minute black spicules, and a ringlet of stout spines apically; meso- and meta-femoral trichobothria as in figures 1235 and 1236.

Head concave behind, covering the anterior margin of the pronotum at least laterally; frons including eyes evenly convexly rounded as viewed from above; posterior margin of vertex nearly straight and carinate (fig. 1238); buccal cavity occupying entire ventral surface of head, gula obsolete, bucculae narrow; labium reaching to mesotrochanters; first antennal segment very short, second segment evenly tapered, diameter increasing distally, length of second segment about equal to width of head, segments three and four subequal in diameter, about one-half diameter of segment two and of about equal length, combined length of segments three and four about equal to length of segment two; pronotum evenly rounded transversely and longitudinally, calli not developed, lateral margins broadly convexly rounded, posterior margin weakly excavated across mesoscutum; mesoscutum exposed about one-fourth length of scutellum, separated from scutellum by an irregular, finely impressed, transverse line; scutellum flat, smooth (figs. 1220, 1223); lateral corial margins weakly convex; cuneal fracture nearly perpendicular to lateral corial margin, slightly arcuate, cuneal incisure shallow; pro- and meso-femora more or less elongate rectangular, metafemora strongly enlarged, inflated, ventral margin more or less straight, dorsal margin strongly convexly curved (fig. 1236); all tibiae straight and cylindrical; parempodia setiform, pulvilli moderately large, claws slightly curving and broadened basally (fig. 1234).

MALE GENITALIA: Vesica usually forming a single distorted coil, secondary gonopore subapical, well-developed, apical portion of vesica a membranous elaboration of varied form, vesica with a median projection, usually as a long, nearly parallel-sided spicule arising proximal to the secondary gonopore and extending to near apex of vesica; phallotheca L-shaped, characteristic phyline type (fig. 1230); left paramere somewhat flattened

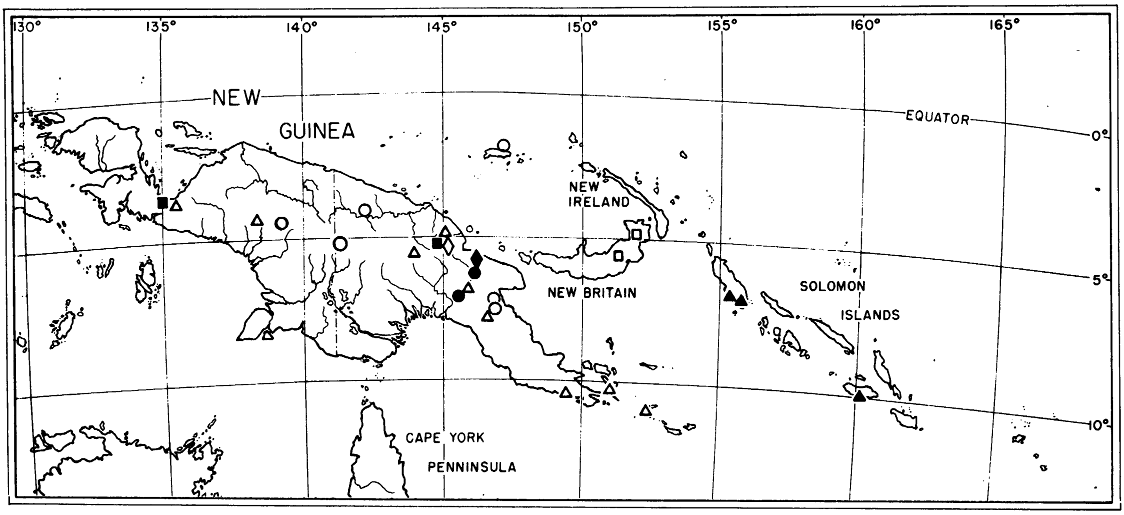


FIG. 1217. Distribution of *Decomioides* spp. *D. bacchusi* (◆); *D. brassi* (△); *D. innotata* (▲); *D. novobrittanicae* (□); *D. pulla* (◇); *D. schneirlai* (●); *D.* near *schneirlai* (○); *D. similis* (■).

in lateral view, typically phyline (fig. 1231); right paramere very small, lanceolate.

FEMALE: Macropterous. Basic coloration, vestiture, surface texture, and structure as in male.

FEMALE GENITALIA: Posterior wall simple.

TYPE SPECIES: *Decomioides schneirlai,* new species.

ETYMOLOGY: Named for its similarity of appearance to *Decomia*; feminine.

DISTRIBUTION: Figures 1217 and 1218. India (undescribed), Sri Lanka west to Taiwan in the north, the Philippine Islands, the Palau Islands, and south and west to New Guinea.

DISCUSSION: With some experience, specimens of *Decomioides* can be easily separated from *Decomia* on the basis of tarsal structure and from *Rubrocuneocoris* and *Campylomma* on the basis of external characteristics. Separation based on the male genitalia from the latter two genera is, nonetheless, the method of greatest certainty. Identification of the species of *Decomioides* is often difficult, not only because of the limited variation in external appearance, but also because of the very small size and subtle variation in the male genitalia.

ADDITIONAL SPECIMENS: Several specimens of *Decomioides* are present in collections which I have not used as the basis for describing new taxa because of the limited or mutilated nature of the material. Eleven males from Malaya, New Guinea, and Sri Lanka (AMNH, Bishop, Copenhagen) are all yellow-white with contrasting dark eyes. Eighty females from South India, Sri Lanka, Sulawesi, New Guinea, Malaya, and the Philippine Islands not attributable with certainty to any described species are deposited in AMNH, BMNH, Copenhagen, and Lund.

KEY TO SPECIES OF *DECOMIOIDES*

1. Basic coloration, including abdomen and metafemora, yellow or yellow-white 2
   Basic coloration variable, at least abdomen and metafemora strongly brown to brownish black 5
2. Large species, length apex tylus-cuneal fracture 1.45 (range 1.30–1.52); male genitalia as in figures 1245–1247, apical portion of vesica broad, without spicules, dorsal margin smoothly curved; New Guinea . . . . . *similis*
   Smaller species, maximum length apex tylus-cuneal fracture 1.37 (range 1.05–1.50); vesica not as above, usually more strongly narrowed distally with spicules, and without smoothly rounded dorsal margin 3
3. Very small species, length apex tylus-cuneal fracture 1.11 (range 1.05–1.32); male geni-

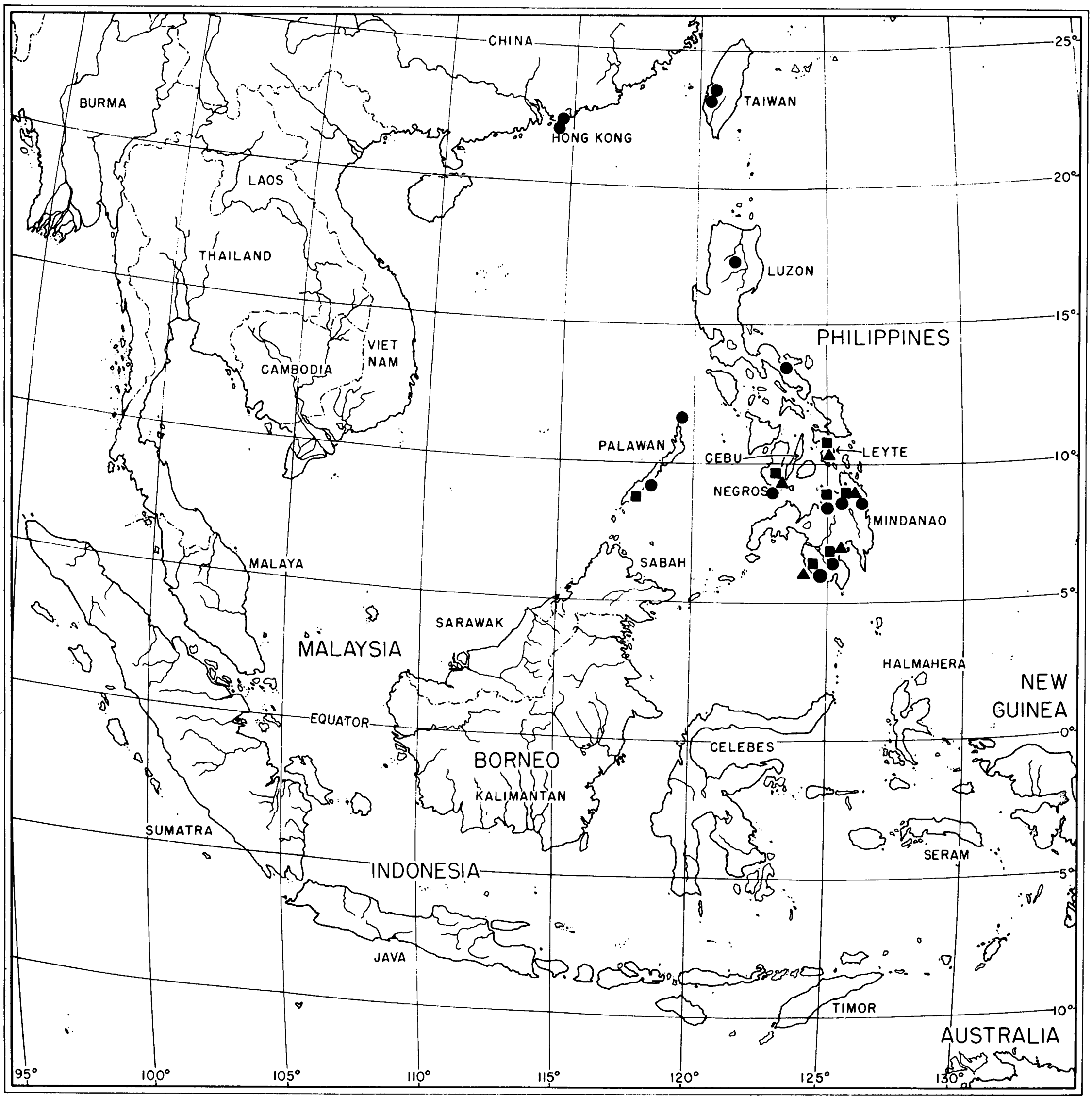

CHINA
BURMA
TAIWAN
HONG KONG
LAOS
THAILAND
LUZON
VIET NAM
CAMBODIA
PHILIPPINES
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
SABAH
MALAYA
MALAYSIA
SARAWAK
HALMAHERA
NEW GUINEA
EQUATOR
BORNEO
KALIMANTAN
CELEBES
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 1218. Distribution of *Decomioides* spp. (continued). *D. innotata* (▲); *D. philippinensis* (■); *D. schneirlai* (●).

talia as in figure 1227; New Guinea, New Britain .... *novobritannicae*

Larger species, length apex tylus-cuneal fracture 1.25 (range 1.17–1.45) 4

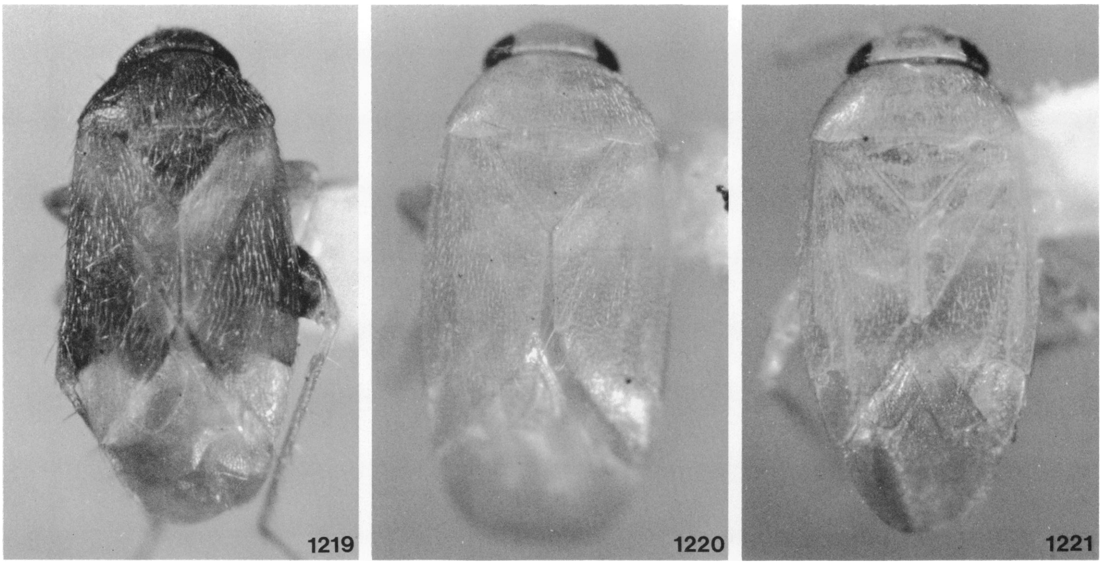
4. Male genitalia as in figure 1228; Palau Islands, Solomon Islands, Philippine Islands .... *innotata*

Male genitalia as in figure 1226; New Guinea .... *brassi*

5. All coxae and femora black, unicolorous with metacoxae and metafemora; dorsum basically brownish black; male genitalia as in figure 1232; New Guinea .... *pulla*

Procoxae and pro- and meso-femora light, usually contrasting with dark metacoxae and femora; coloration of dorsum variable, never totally brownish black 6

6. Dorsum basically dark brown with a strongly contrasting, wide, nearly white fascia across anterior and one-third of hemelytra and pos-



FIGS. 1219–1221. *Decomioides* spp. 1219. *D. bacchusi,* holotype. 1220. *D. brassi,* ♂, Papua New Guinea, Eastern Highlands Prov., Kratke Mountains, Arau. 1221. *D. innotata,* ♂, Philippine Islands, Negros, Dumaguete.

terior one-half of scutellum; male genitalia as in figures 1229–1231; Philippine Islands .... *philippinensis*

Coloration of dorsum not as above, usually more or less uniform light to medium brown, sometimes dirty yellow 7

7. Male genitalia as in figures 1242–1244; length apex tylus-cuneal fracture 1.29 (range 1.20–1.37); cuneus distinctly orangish in most specimens, contrasting more or less strongly with surrounding hemelytral pigmentation; Philippine Islands, Taiwan, Hong Kong, New Guinea .... *schneirlai*

Male genitalia as in figure 1225; length apex tylus-cuneal fracture 1.40; coloration of cuneus not noticeably orangish in known specimens, but always lighter than adjacent hemelytra; New Guinea .... *bacchusi*

Decomioides bacchusi, new species

Figures 1217, 1219, 1225

DIAGNOSIS: Recognized by the combination of characters given in the key, most easily confused with *schneirlai.*

DESCRIPTION: Macropterous male. Small ovoid, length apex tylus-cuneal fracture 1.40, width pronotum 0.80; basic coloration dark dirty brown, including head, pronotum scutellum, base and posterior one-third of clavus, and posterior two-thirds of corium; remainder of clavus, extreme base of corium, entire cuneus, antennal segment one and proximal two-thirds of antennal segment two, procoxae, pro- and meso-femora, all tibiae, and all tarsi dirty yellow; membrane strongly infuscate; thoracic pleuron, entire abdomen, and metafemora castaneous.

Basic structure, surface texture, and vestiture as in generic description.

MALE GENITALIA: Figure 1225.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for M. E. Bacchus.

DISTRIBUTION: Figure 1217. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Madang Prov.:* Finisterre Mountains, Budemu, *ca.* 4000 feet, October 15–24, 1964, Station No. 51, M. E. Bacchus collector; deposited in the British Museum (Nat. Hist.).

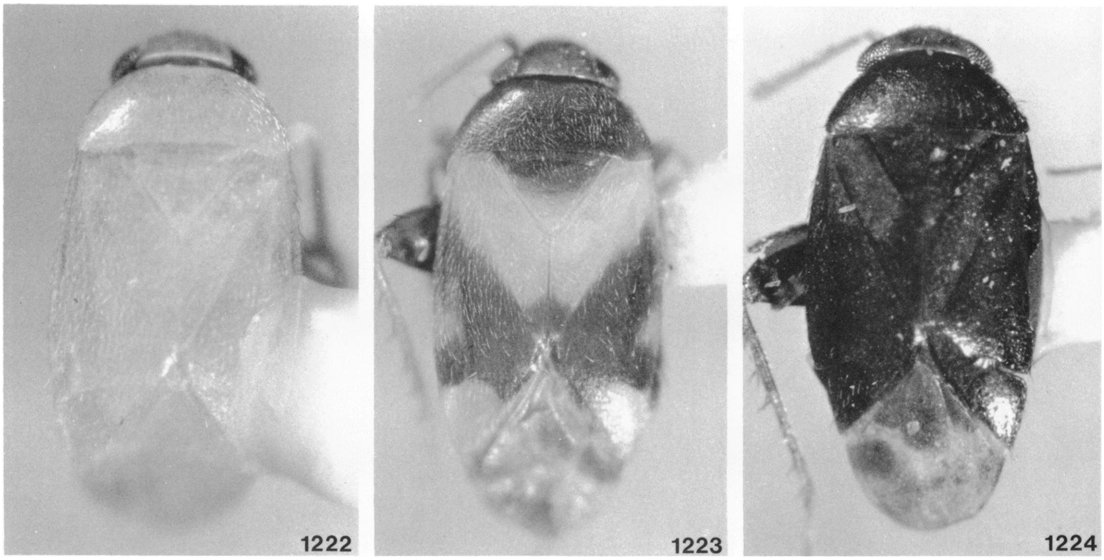
PARATYPE: Same data as holotype (BMNH), 1♂.

Decomioides brassi, new species

Figures 1217, 1220, 1226

DIAGNOSIS: Recognized by the characters given in the key.

DESCRIPTION: Macropterous male. Small,



FIGS. 1222–1224. *Decomioides* spp. 1222. *D. novobritannicae,* holotype. 1223. *D. philippinensis,* ♂, Philippine Islands, Mindanao, 26 km. E of Gingoog City. 1224. *D. pulla,* ♂, holotype.

ovoid, length apex tylus-cuneal fracture 1.37 (1.15–1.50), width pronotum 0.78 (0.67–0.82); basic coloration yellow-white; eyes dark and contrasting.

Basic structure, surface texture, and vestiture as in generic description.

MALE GENITALIA: Figure 1226.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for L. J. Brass.

DISTRIBUTION: Figure 1217. New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Kratke Mountains, Arau, Upper Wanton Valley, Camp No. 11, 1400 m., October 18–22, 1959, Sixth Archbold Expedition to New Guinea, L. J. Brass collector; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype (AMNH), 6♂♂. INDONESIA: *West Irian:* Kutsime, W of Swart Valley, 1500 m., November 14, 1958, light trap (Gressitt; Bishop), 1♂; Nabire, S of Geelvink Bay, 0–30 m., July 2–9, 1962 light trap (Gressitt and Sedlacek; Bishop), 1♂; Nabire, S of Geelvink Bay, September 13, 1962, light trap (Holtmann; Bishop), 1♂. PAPUA NEW GUINEA: *Central Prov.:* Mamai Plantation E of Port Glasgow, 150 m., January 29, 1965, light trap (Straatman; Bishop), 1♂. *Madang Prov.:* Adelbert Mountains, Wanuma, 800–1000 m., October 26–27, 1958, light trap (Gressitt; Bishop), 7♂♂. *Milne Bay Prov.:* Dawa Dawa, 1–10 m., December 2–6, 1956 (Brass; AMNH), 1♂, 1♀; Ferguson Island, Iamelele, No. 1, about 15 m., May 25–29, 1956 (Brass; AMNH), 4♂♂; Misima Island, Mt. Sisa, 350 m., July 25, 1956 (Brass; AMNH), 1♂; Normandy Island, Waikaiuna, 0–50 m., April 11–28, 1956 (Brass; AMNH), 1♂. *Morobe Prov.:* Oomisis, 22 mi. W of Lae on Lae-Bululo Road, 100 m., April 26, 1956 (Brass; AMNH), 1♂; Wau, McAdam Park, 1250 m., October 23, 1965 (Sedlacek; Bishop), 1♂. *Western Highlands Prov.:* Baiyer River, 1150 m., October 17, 1958, light trap (Gressitt; Bishop), 1♂.

ADDITIONAL SPECIMENS: Same data as holotype (AMNH), 2♂♂.

Decomioides innotata (Carvalho), new combination

Figures 1217, 1218, 1221, 1228

Campylomma innotata Carvalho, 1956b, p. 37.

DIAGNOSIS: Recognized by the combination of characters given in the key.

Male Genitalia: Figure 1228.

Female Genitalia: Not examined.

Measurements: See Appendix.

Distribution: Figures 1217 and 1218. Philippine Islands, Caroline Islands (Palau Group), and Solomon Islands.

Specimens Examined: CAROLINE ISLANDS: *Palau Group:* Koror, May 15, 1953 and July 20, 1953, at light (Beardsley; Bishop), 2♀♀. PAPUA NEW GUINEA: *Bougainville Prov.:* Bougainville, Boku, June 6, 1956, light trap (Gressitt; Bishop), 1♂; South Bougainville, June 1, 1956 (Ford; Bishop), 1♂; South Bougainville, Kleta, June 12, 1956, light trap (Gressitt; Bishop), 1♀; South Bougainville, Buin (Kangu), 1–50 m., May 31, 1958, light trap (Gressitt; Bishop), 1♂. PHILIPPINE ISLANDS: *Leyte:* Abuyog, 35 mi. S of Tacloban, July 5–8, 1961 (AMNH), 1♂, 1♀. *Mindanao:* Davao Prov., May 3 (Clagg; AMNH), 1♂, 9♀♀; Misamis Oriental, Dinawihan Gingoog, 26 km. E of Gingoog City, 100–300 m., August 22, 1965, malaise trap (Torrevillas; Bishop), 2♂♂; Mt. Balatukan, 15 km. SE of Gingoog City, 1000–2000 m., April 21, 1960 (Torrevillas; Bishop), 2♀♀; Mt. Empagatao, Camp II, 1100 m., April 21, 1961, light trap (Torrevillas; Bishop), 1♂; Cotabato Prov., Milbuk, August 9–10, 1958, light trap (Milliron; Bishop), 2♀♀. *Negros Island:* Dumaguete, Camp Lookout, May 20–28, 1961 (Schneirla and Reyes), 10♂♂, 11♀♀; Dumaguete, Camp Lookout, 1300 feet, May 2–3, 1961 (Schneirla and Reyes; AMNH), 2♂♂, 1♀; Dumaguete, Camp Lookout, February 15–April 15, 1961 (Schneirla and Reyes; AMNH), 5♂♂, 1♀. SOLOMON ISLANDS: *Guadalcanal:* Kukum, 10 m., June 21, 1956 (Gressitt; Bishop), 1♂, 3♀♀.

Discussion: *Decomioides innotata* was described by Carvalho (1956b) as a species of *Campylomma.* In his key (pp. 32–33) he placed it with those species which have the second antennal segment generally light colored; within this group he recognized it as the only species without dark spots on the femora. *Decomioides* species certainly look superficially much like the females of *Campylomma* and also like the smaller lighter colored species of *Decomia.* Even though I have not dissected the holotype male of *innotata,* there seems little doubt that this taxon belongs in *Decomioides.* It lacks the femoral spots, the distal row of small spines on the dorsal surface of the metafemur, and has a very short second antennal segment. The first of these two characters appears to be a synapomorphy for *Campylomma,* and its absence excludes *innotata* from that group; most *Campylomma* species have a relatively long second antennal segment which also shows some sexual dimorphism. The enlarged hind femora and characteristic head shape of *innotata* also do not agree with *Campylomma.* The vesica of *Campylomma* and *Decomioides* show little similarity. Thus, there seems little doubt about the generic identity of *innotata.*

Decomioides novobritannicae, new species

Figures 1217, 1222, 1227

Diagnosis: Recognized by the combination of characters given in the key.

Description: Macropterous male. Small, ovoid, length apex tylus-cuneal fracture 1.11 (1.05–1.52), width pronotum 0.73 (0.70–0.75); basic coloration yellow-white; eyes dark.

Basic structure, surface texture, and vestiture as in generic description.

Male Genitalia: Figure 1227.

Female: See generic description.

Female Genitalia: Not examined.

Measurements: See Appendix.

Etymology: Named for its occurrence on New Britain.

Distribution: Figure 1217. New Britain.

Holotype ♂: PAPUA NEW GUINEA: *East New Britain Prov.:* New Britain, Gazelle Peninsula, Perawat, 60 m., August 31, 1955, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

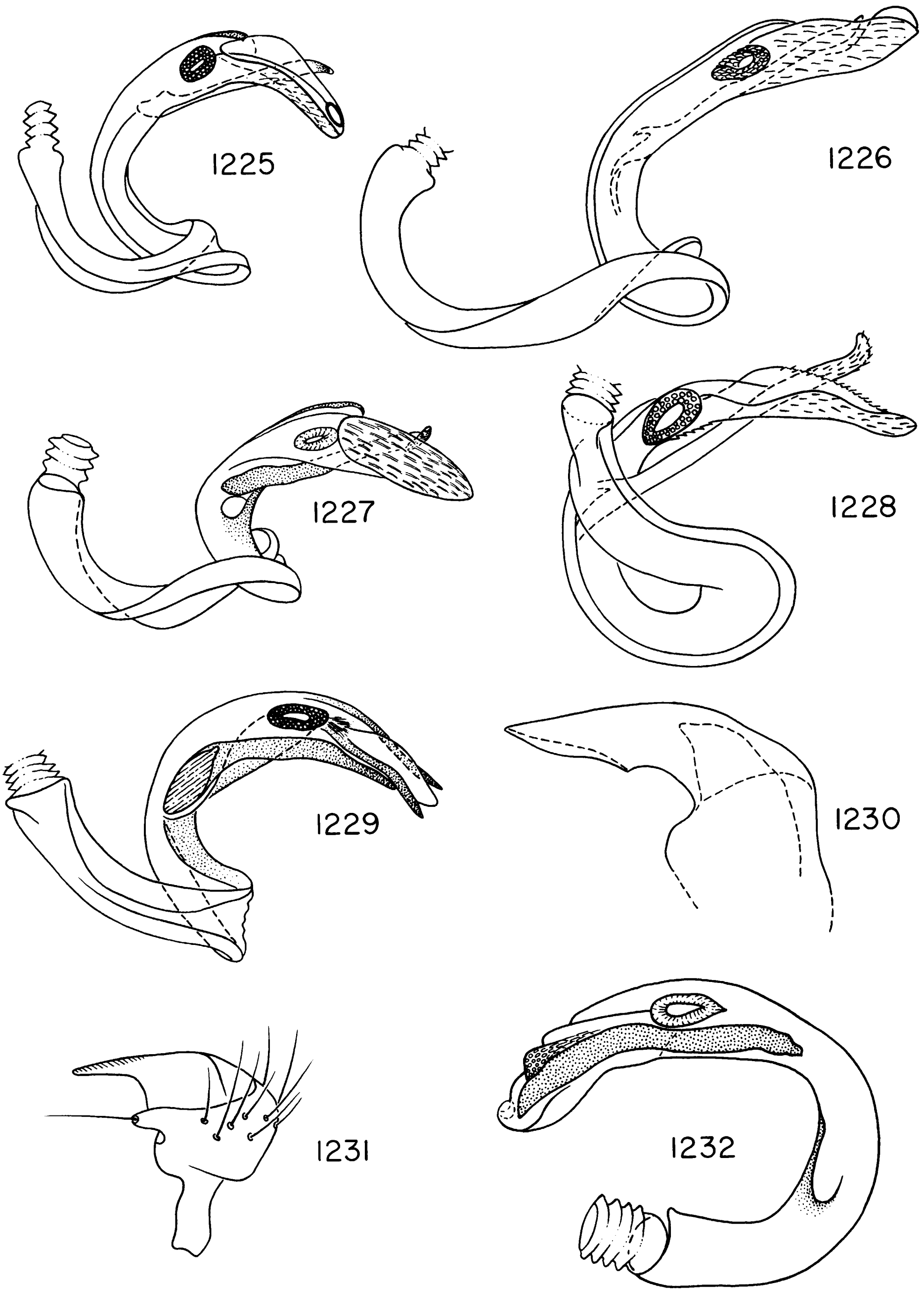
Paratypes: Same data as holotype (AMNH; Bishop), 18♂♂, 19♀♀. PAPUA NEW GUINEA: *East New Britain Prov.:* New Britain, Ti, Nakani Mountains, July 28, 1956 (Ford; Bishop), 1♂.

Decomioides philippinensis, new species

Figures 1218, 1223, 1229–1231

Diagnosis: Recognized by the combination of characters given in the key, especially the distinctive brown and white coloration.

Description: Macropterous male. Small, ovoid, length apex tylus-cuneal fracture 1.52,



FIGS. 1225–1232. *Decomioides* spp., male genitalia. 1225. *D. bacchusi,* vesica. 1226. *D. brassi,* vesica. 1227. *D. novobritannicae,* vesica. 1228. *D. innotata,* vesica. 1229–1231. *D. philippinensis.* 1229. Vesica. 1230. Phallotheca. 1231. Left paramere. 1232. *D. pulla,* vesica.

width pronotum 0.87; coloration a pattern of deep brown and yellow-white as follows: most of head, pronotum, mesoscutum, extreme anterior portion of scutellum, extreme apex of clavus, posterior two-thirds of corium (except for light, large, round spots adjacent to apex of clavus and anterior to cuneal fracture along costal margin), thoracic pleura, meso- and meta-coxae, abdomen, and metafemora dark brown; remainder of dorsum, antennae, procoxae, pro- and meso-femora, all tibiae and tarsi, and labium yellow-white; posterior margin of vertex, anterior margin of pronotum, and midline of anterior lobe of pronotum yellow-brown; membrane mottled.

Basic structure, surface texture, and vestiture as in generic description.

MALE GENITALIA: Figures 1229–1231.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in the Philippine Islands.

DISTRIBUTION: Figure 1218. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Mindanao:* Misamis Oriental, Dinawihan Gingoog, 26 km. E of Gingoog City, 100–300 m., August 21, 1965, malaise trap, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (Bishop), 2♀♀. PHILIPPINE ISLANDS: *Leyte:* Abuyog, 35 mi. S of Tacloban, July 7, 1961 (AMNH), 1♀. *Mindanao:* Misamis Oriental, Mt. Pomalihi, 21 km W of Gingoog City, 800–1000 m., December 15, 1965, light trap (Torrevillas; Bishop), 3♀♀; Davao Prov., Genitalan, 8 km. NW of Mt. Apo, 690 m., August 17, 1958, jungle clearing, light trap (Milliron; Bishop), 1♀; Cotabato Prov., 11 km. NW of Milbuk, 390 m., August 5, 1958, logged area (Milliron; Bishop), 1♂. *Negros Island:* Dumaguete, Camp Lookout, May 24, 1961 (Schneirla and Reyes; AMNH), 1♀. *Palawan:* Brookes Point, Uring Uring, August 14, 1961 (Noona Dan; Copenhagen), 1♀.

Decomioides pulla, new species

Figures 1217, 1224, 1232

DIAGNOSIS: Recognized by the combination of characters given in the key, especially the large size, blackish coloration, and the form of the male genitalia.

DESCRIPTION: Macropterous male. Relatively large, ovoid, length apex tylus 1.58, width pronotum 0.90; basic coloration brownish black; head, tibiae, tarsi, and most of labium pale to orange-brown; antennae yellowish; labial segment one reddish; membrane mottled brown.

Basic structure, surface texture, and vestiture as in generic description.

MALE GENITALIA: Figure 1232.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its coloration; from the Latin, *pulla,* dark colored.

DISTRIBUTION: Figure 1217. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Madang Prov.:* Adelbert Mountains, Wanuma, 800–1000 m., October 27, 1958, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

Decomioides schneirlai, new species

Figures 1217, 1218, 1233–1236, 1238–1244

DIAGNOSIS: Recognized by the combination of characters given in the key, especially the coloration, including the generally orange cuneus.

DESCRIPTION: Macropterous male. Small, ovoid, length apex tylus-cuneal fracture 1.29 (1.20–1.37), width pronotum 0.77 (0.70–0.85); basic coloration medium to light orange-brown, cuneus somewhat darker in most specimens; antennae, procoxae, pro- and meso-femora, and all tibiae and tarsi light tan to nearly white.

Basic structure, surface texture, and vestiture as in generic description; meso- and meta-femoral trichobothria as in figures 1235 and 1236; pretarsus as in figure 1234.

MALE GENITALIA: Figures 1242–1244.

FEMALE: See generic description.

FEMALE GENITALIA: Posterior wall simple.

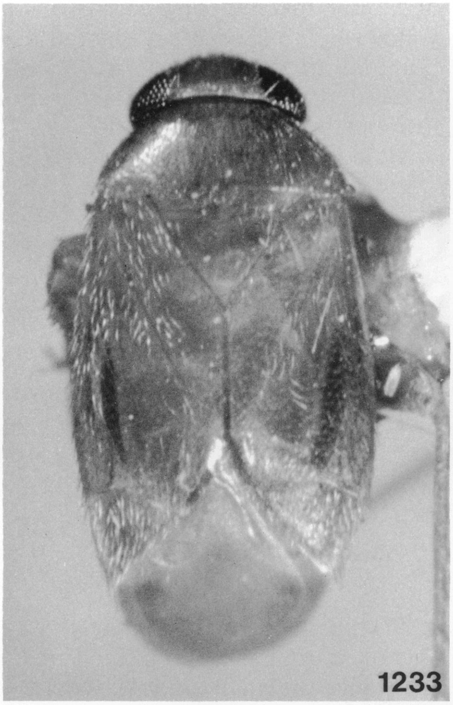
MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for T. C. Schneirla.

DISTRIBUTION: Figures 1217 and 1218. Hong Kong, Taiwan, Philippine Islands, and eastern New Guinea.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Negros Island:* Dumaguete, Camp Lookout, 1300 feet, February 15–April 15, 1961, T. C. Schneirla and A. Reyes collectors; deposited in the American Museum of Natural History, New York.

PARATYPES: Same data as holotype, and April 6–May 28, 1961 (AMNH), 16♂♂, 36♀♀.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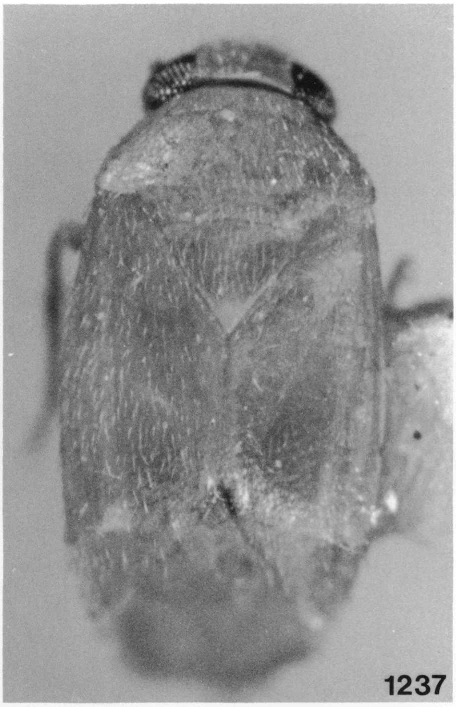
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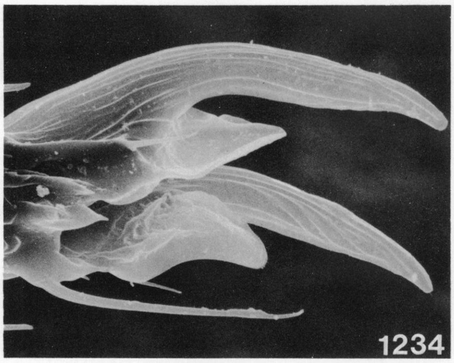
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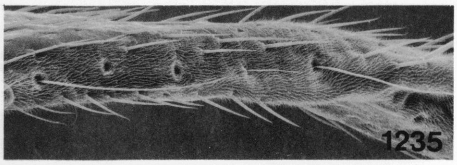
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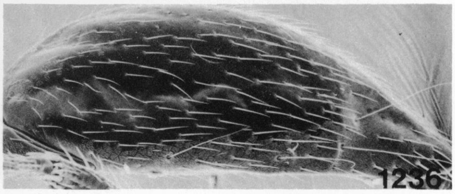
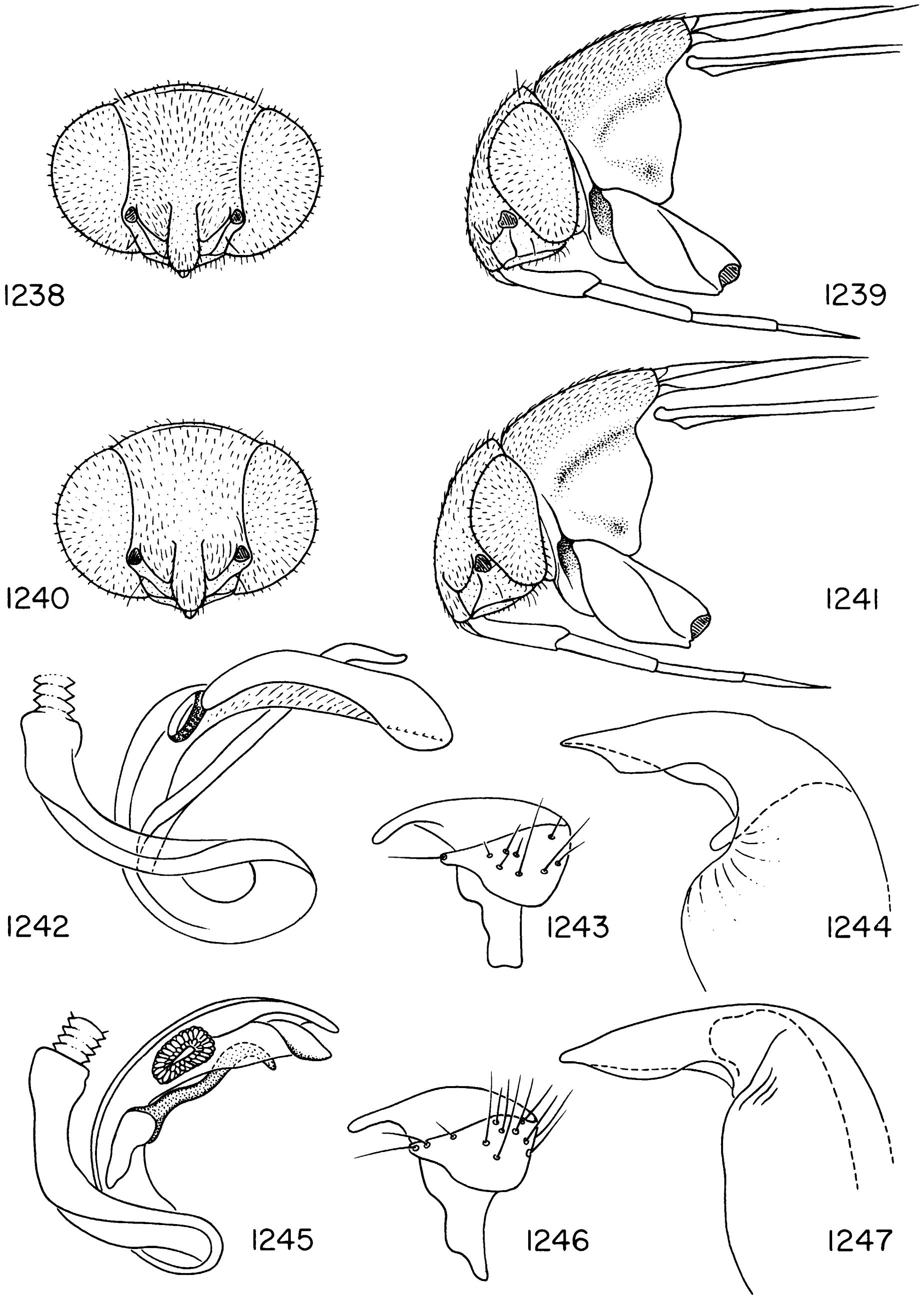

1236

FIGS. 1233–1237. *Decomioides* spp. 1233–1236. *D. schneirlai.* 1233. Dorsal view, ♂, Philippine Islands, Luzon, Mt. Isarog. 1234. Pretarsus. 1235. Mesofemur, showing trichobothria. 1236. Metafemur, showing trichobothria. 1237. *D. similis,* holotype.

HONG KONG: Hong Kong Island, Polfulan, 150 m., May 29–31, 1964, light trap (Gressitt; Bishop), 6♂♂, 9♀♀; N.T., Taipokau, April 30, 1965 (Ming and Ming; Bishop), 1♂, 1♀. PHILIPPINE ISLANDS: *Busuanga Island:* 4 km. N of San Nicholas, May 21, 1962, light trap (Holtmann; Bishop), 1♂. *Luzon:* Camarines Sur, Mt. Isarog, 750–850 m., May 13–15, 1963 (Torrevillas; Bishop), 6♂♂, 4♀♀; Mountain Prov., Liwo, 8 km. E of Mayoyao, 100–1300 m., May 30, 1967, light trap (Torrevillas; Bishop), 3♀♀. *Mindanao:* Asugan, San Francisco, 6–10 km. SE, November 12–18, 1959 (Quate and Yoshimoto; Bishop), 2♀♀; Davao Prov., Genitalan, 8 km. NW of Mt. Apo, 690 m., August 17, 1958, jungle clearing, light trap (Milliron; Bishop), 1♂; Davao Prov., Calian, June 13 (Clagg; AMNH), 1♂, 1♀; Misamis Oriental, Diniwihan, Gingoog, 26 km. E of Gingoog City, 100–300 m., August 14, 1965 (Torrevillas; Bishop), 2♂♂, 2♀♀; Mt. Pomalihi, 21 km. W of Gingoog City,



FIGS. 1238–1247. *Decomioides* spp. 1238–1244. *D. schneirlai.* 1238. Frontal view of head, ♂. 1239. Lateral view of head and prothorax, ♂. 1240. Frontal view of head, ♀. 1241. Lateral view of head and prothorax, ♀. 1242. Vesica. 1243. Left paramere. 1244. Phallotheca. 1245–1247. *D. similis.* 1245. Vesica. 1246. Left paramere. 1247. Phallotheca.

800–1000 m., September 15, 1965, light trap (Torrevillas; Bishop), 3♂♂; Cotabato Prov., Milbuk, August 10, 1958, light trap (Milliron; Bishop), 3♂♂; Cotabato Prov., 3.2 km. NW of Milbuk, 150 m., August 4, 1958, light trap in jungle (Milliron; Bishop), 2♂♂; Cotabato

Prov., 11 km. NW of Milbuk, 390 m., August 5, 1958, logged area (Milliron; Bishop), 1♂. *Palawan:* Tarumpitao Point, May 21, 1958, light trap (Milliron; Bishop), 1♂. TAIWAN: Chiayi, Chiayi Hsien, April 12–13, 1965, malaise trap (Yoshimoto and Perkins; Bishop), 7♂♂, 4♀♀; Kwantzeling, Tainan Hsien, 250 m., April 6–7, 1965 (Yoshimoto; Bishop), 2♀♀.

ADDITIONAL SPECIMENS: Same data as holotype (AMNH), 1♂. PAPUA NEW GUINEA: *Eastern Highlands Prov.:* Kratke Mountains, Arau in Valley of Upper Wanton River, 1400 m., October 10–20, 1959 (Brass; AMNH), 1♂. *Morobe Prov.:* Umi River, Markham Valley, 480 m., November 19, 1959 (Brass; AMNH), 1♂; Kassam, 48 km. E of Kainantu, 1350 m., October 1959 (Maa; Bishop), 1♀.

Decomioides near *schneirlai*

DISCUSSION: A series of specimens, the locality data for which are listed below, are known from New Guinea. The male genitalia are nearly identical with those of *schneirlai* from the Philippine and other localities, but there are differences in coloration as follows: 1) the cuneus does not have the orangish suffusion found in most specimens assigned to *schneirlai*; 2) the procoxae and pro- and mesofemora are weakly infuscate and do not contrast as strongly with the metafemora as in *schneirlai*; and the abdomen is light laterally as opposed to *schneirlai* where it is totally dark.

SPECIMENS EXAMINED: INDONESIA: *West Irian:* Boden, 11 km. SE of Oerberfaren, 100 m., July 1–17, 1959 (Maa; Bishop), 1♂; Bokondini, 40 km. N of Baliem Valley, *ca.* 1300 m., November 5–11, 1961, light trap (Quate and Quate; Bishop), 1♀. PAPUA NEW GUINEA: *East Sepik Prov.:* Ambunti, Sepik River, 200 m., May 6, 1963, light trap (Straatman; Bishop), 1♂. *Manus Prov.:* Admiralty Islands, Manus Islands, Lorengau, June 18, 1962, MV light (Noona Dan; Copenhagen), 1♂. *Morobe Prov.:* Mumeng, 600 m., March 9–10, 1962 (Sedlacek; Bishop), 1♂; Wau, 1200 m., June 17, 1961, light trap (Gressitt and Sedlacek; Bishop), 1♂; Wau, 1100–1300 m., July 1968, MV light trap (Sedlacek; Bishop), 2♂♂, 3♀♀; Wau, 1200–1400 m., May, June, and December (Bishop), 3♀♀. *West Sepik Prov.:* Feraramin, 120–150 m., May 23–31, 1959 (Brandt; Bishop), 1♂. [*Prov. unknown*]: Eliptamin Valley, 1665–2530 m., June 19, 1959 (Brandt; Bishop), 1♀.

Decomioides similis, new species

Figures 1217, 1237, 1245–1247

DIAGNOSIS: Recognized by the combination of characters given in the key.

DESCRIPTION: Macropterous male. Small, ovoid, length apex tylus-cuneal fracture 1.45 (1.30–1.52), width pronotum 0.81 (0.75–0.85); basic coloration light dirty yellow-brown; distal one-fourth of antennal segment two and segments three and four brown; eyes dark.

Basic structure, surface texture, and vestiture as in generic description.

MALE GENITALIA: Figures 1245–1247.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its similarity to the other light-colored species of *Decomioides.*

DISTRIBUTION: Figure 1217. New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Madang Prov.:* Adelbert Mountains, Wanuma, 800–1000 m., October 27, 1958, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

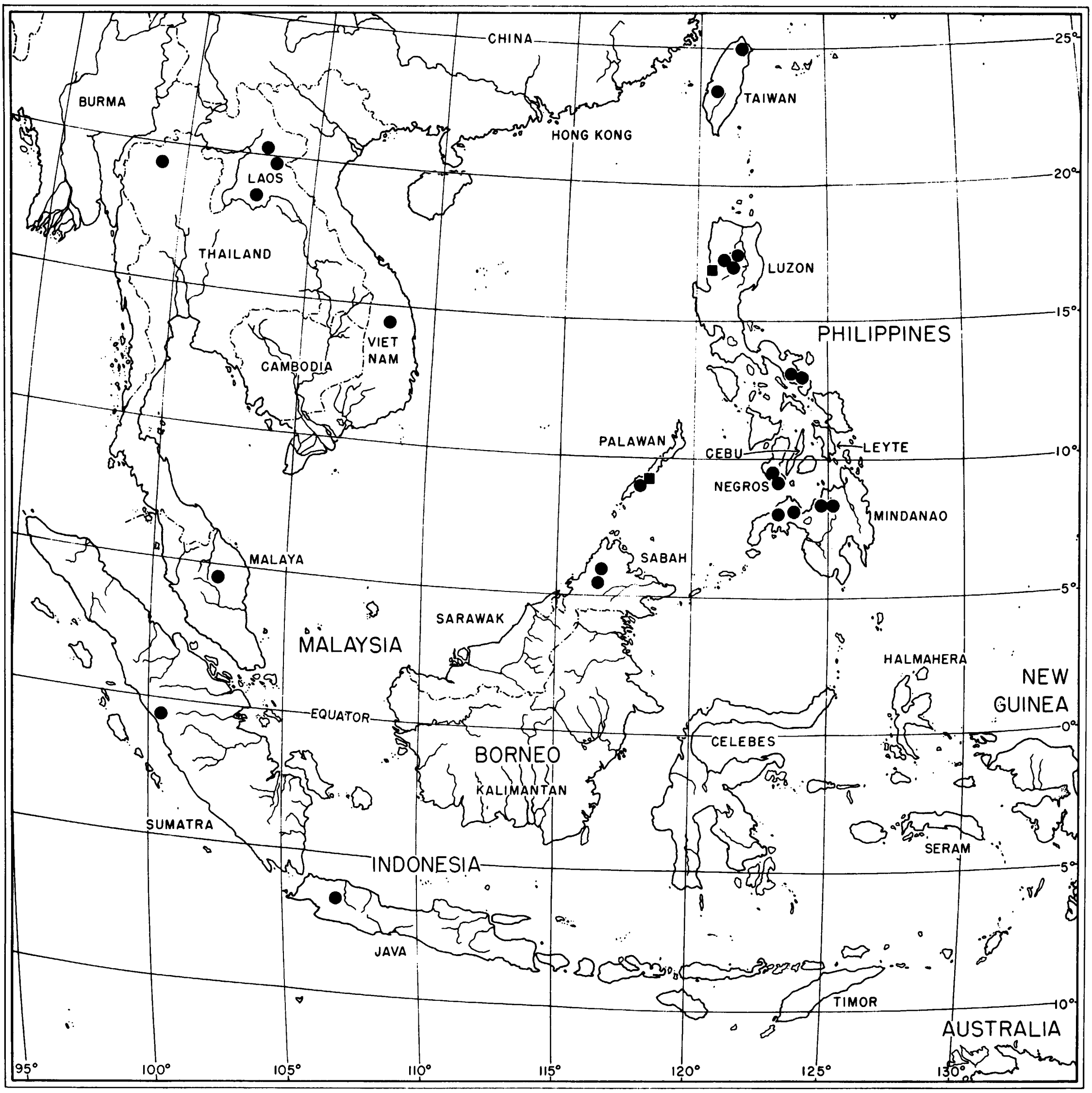
PARATYPES: Same data as holotype, and October 23 and 25, 1958 (AMNH, Bishop), 5♂♂.

ADDITIONAL SPECIMENS: INDONESIA: *West Irian:* Nabire, S of Geelvink Bay, 70 m., July 7, 1962 (Gressit; Bishop), 2♂♂.

ELLENIA REUTER

Ellenia Reuter, 1910a, p. 168; Schuh, 1974, p. 157.

DIAGNOSIS: Recognized by the hemelytra at least partly hyaline or subhyaline, the head weakly exserted or weakly concave behind, the genital capsule of the male usually with a ventral longitudinal keel (fig. 1261; but see *E. philippinensis*), parempodia weakly fleshy (see Schuh, 1976, figs. 30–32), the vesica with a single apical spine with or without barbules and with a series of notches subtending the secondary gonopore (figs. 1253, 1264), and


CHINA
BURMA
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LEYTE
NEGROS
MINDANAO
MALAYA
SABAH
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 1248. Distribution of *Ellenia* spp. *E. obscuricornis* (in part) (●); *E. philippinensis* (■).

the left paramere with the posterior process strongly flattened and elevated.

DESCRIPTION: Macropterous male. Small- to medium-sized, ovate, range distance apex tylus-cuneal fracture 1.63–2.15, range width pronotum 1.02–1.18; hemelytra hyaline or subhyaline; basic coloration variable, from light yellow-green to largely black; dorsum often heavily spotted, basal half of hemelytra sometimes nearly black and opaque; dorsum weakly polished or dull, impunctate, with reclining common setae and decumbent woolly setae; antennae with reclining setae of length less than diameter of segment; anterolateral angles of pronotum with an erect spine; femora from totally light to almost totally black, when light most spines and trichobothria with dark bases (meso- and meta-femoral trichobothria as in Schuh, 1975, figs. 81, 82); tibiae with scattered black spines at least as long as tibial diameter, usually with black bases (at least on proximal half of tibiae); tibiae also with several rows of minute black spinules over entire length.

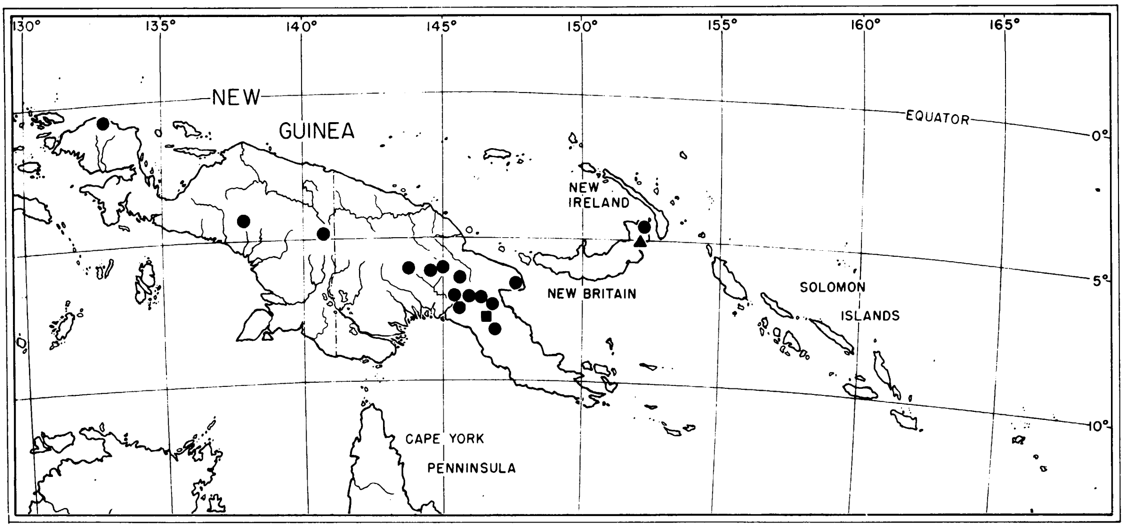
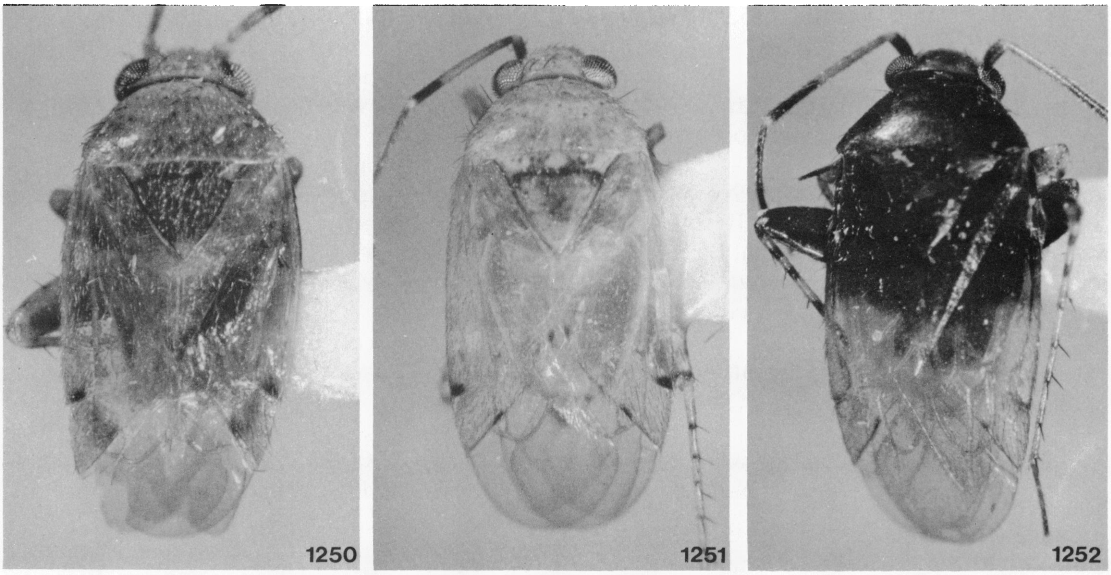


FIG. 1249. Distribution of *Ellenia* spp. (continued). *E. novobritannicae* (▲); *E. novoguinensis* (■); *E. obscuricornis* (in part) (●).

Head weakly concave behind, at most slightly obscuring anterior margin of pronotum, posterior margin of eyes usually slightly removed from anterior margin of pronotum; head transverse in dorsal view, clypeus at most barely visible from above; vertex weakly convex, posterior margin either rounded or angulate, straight to slightly concave between eyes and with a row of heavy setae (figs. 1250–1252, 1259); eyes occupying from slightly over half to nearly entire height of head in lateral view, weakly emarginate anteriorly, antennal fossae contiguous with anterior margin of eyes, ventral margin of fossae just above ventral margin of eyes (figs. 1262, 1263); buccal cavity nearly round to oval; gula narrow or obsolete; labium reaching from anterior margin of mesocoxae to posterior margin of metacoxae; antennal segment one about as long as anteroposterior length of eye, stout, weakly pedunculate, segment two cylindrical, of nearly equal diameter over entire length, length of segment two equal to or slightly greater than width of head, but always less than width of pronotum, segments three and four subequal in diameter, about one-half diameter of segment two, combined length equal to or slightly greater than length of segment two; pronotum weakly and smoothly rounded, anterior lobe about one-half length of posterior lobe, calli inconspicuous, lateral margins nearly straight to weakly rounded, angled anteriorly, posterolateral angles broadly rounded, posterior margin nearly straight to weakly excavated across mesoscutum; mesoscutum exposed, separated from scutellum by a distinct impression; scutellum smooth, weakly and smoothly convex; cuneal fracture short, angled anteromesially; small cell of membrane triangular, posterior and inner margins of cell broadly rounded; metathoracic scent-gland evaporatory area as in figure 1260; genital capsule usually with a ventral longitudinal keel (fig. 1261; but see *E. philippinensis*); metatarsal segment one about one-half length of segment two, segments two and three subequal in length; claws broad basally, evenly curved, pulvilli small, parempodia weakly enlarged and fleshy (see Schuh, 1976, figs. 30–32).

MALE GENITALIA: Vesica short, stout, weakly S-shaped, with a single, short to moderately long, apical spine sometimes with barbules apically (e.g., figs. 1253, 1264); well-developed secondary gonopore subtended by a more or less heavily sclerotized area with from four to about 10 marginal notches (e.g., figs. 1253, 1264); phallotheca more or less L-shaped; left paramere with posterior process elevated, sometimes very strongly so (e.g.,



FIGS. 1250–1252. *Ellenia* spp. 1250. *E. novobritannicae*. 1251. *E. novoguinensis*. 1252. *E. philippinensis*, holotype.

figs. 1254, 1265); right paramere small, lanceolate.

FEMALE: Macropterous. Similar to male except eyes slightly to noticeably smaller, not occupying as much of sides of head and vertex proportionately wider; antennal segment two with little or no sexual dimorphism.

FEMALE GENITALIA: Posterior wall simple.

DISTRIBUTION: Figures 1248 and 1249. Circumtropical, extending into temperate areas of southern Africa and South America. In the study area known from India east to Taiwan in the north and New Guinea in the south.

DISCUSSION: See discussion under *Ragmus*.

ADDITIONAL SPECIMENS: The following specimens have weakly fleshy parempodia and the male has a ventral longitudinal keel on the genital capsule; they would therefore be included in the *Ellenia* if sufficient material existed to merit description: a single male specimen from Malaya (Bishop) with genitalia similar to *E. novobritannicae* and *E. novoguinensis*; a single female specimen from Fiji (Bishop) with the general aspect and coloration very similar to that found in *E. philippinensis*.

Ellenia novobritannicae, new species

Figures 1249, 1250, 1253–1255

DIAGNOSIS: Recognized by its relatively small size, orangish coloration, light first antennal segment, and abdominal segment two without a dark proximal ring, the ventral longitudinal keel on the genital capsule of the male, the vesica with a short apical spine and only a few notches subtending the gonopore, and the left paramere with a nearly vertical posterior process (figs. 1253–1255).

DESCRIPTION: Relatively small, ovoid, length apex tylus-cuneal fracture 1.65, maximum width pronotum 0.95; basic coloration medium orange-brown including corium and clavus; mesoscutum and scutellum darker; antennal segment one and proximal three-fifths of antennal segment two dirty white, remainder of segment two and all of segments three and four nearly black; femoral spines and trichobothria with inconspicuous dark bases; proximal tibial spines with dark bases.

Eyes occupying entire height of head in lateral view; head short, not extending anteriorly beyond eyes; labium reaching to apex of mesocoxae; buccal cavity round, gula short; posterior margin of pronotum straight.

MALE GENITALIA: Figures 1253–1255. Very similar in structure to *Ellenia novoguinensis*.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on the island of New Britain.

DISTRIBUTION: Figure 1249. New Britain.

HOLOTYPE ♂: PAPUA NEW GUINEA: *New Britain Prov.:* Gazelle Peninsula, Bainings, St. Paul's, 350 m., September 4, 1955, light trap, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPE: Same data as holotype, but September 7, 1955 and not at light (Bishop), 1♂.

Ellenia novoguinensis, new species

Figures 1249, 1251, 1256–1258

DIAGNOSIS: Recognized by the light coloration without dark spots, the coloration of the antennae, the relatively large eyes, the ventral longitudinal keel on the genital capsule of the male, and the form of the male genitalia (figs. 1256–1258), the vesica with short apical spine and only a few notches subtending the secondary gonopore, and the left paramere with a nearly erect posterior process.

DESCRIPTION: Macropterous male. Medium-sized, length apex tylus-cuneal fracture 1.98, width pronotum 1.08; basic coloration light brownish to orangish yellow, abdomen strongly greenish; antennal segment one with a narrow, faint dark ring proximally and distally; antennal segment two on proximal one-ninth and distal one-fourth and all of antennal segments three and four black; mesoscutum and scutellum ranging from not at all to completely infuscate; apex of clavus, apex of corium at costal margin, cuneus along inner margin of small membrane cell, and apex of genital capsule infuscate; some trichobothria and spines on all femora and spines of proximally on tibiae with dark bases; reclining spines on head and pronotum nearly black, lighter posteriorly; hemelytra hyaline and without spots.

Eyes occupying nearly entire height of head in lateral view; head projection anterior to eyes by a distance equal to about the length of an eye; labium reaching to apex of metacoxae; buccal cavity round, gula short; posterior margin of pronotum nearly straight.

MALE GENITALIA: Figures 1256–1258. Vesica with a short apical spine, four notches subtending gonopore; phallotheca elongate; left paramere with posterior process elongated and nearly vertical, weakly bent apically.

FEMALE: Macropterous. As in male except eyes slightly smaller.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence in New Guinea.

DISTRIBUTION: Figure 1249. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Morobe Prov.:* Wau, August 14, 1972, MV light trap, G. G. E. Scudder collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: PAPUA NEW GUINEA: *Morobe Prov.:* Mt. Kaindi, 2350 m., September 18, 1972, MV light trap (Scudder; Bishop), 1♂; Wau, 1200–1250 m., October 20–28, 1961, January 18–21, 1963, February 4, 1963, and July 28–29, 1963 (Sedlacek; AMNH, Bishop), 2♂♂, 2♀♀.

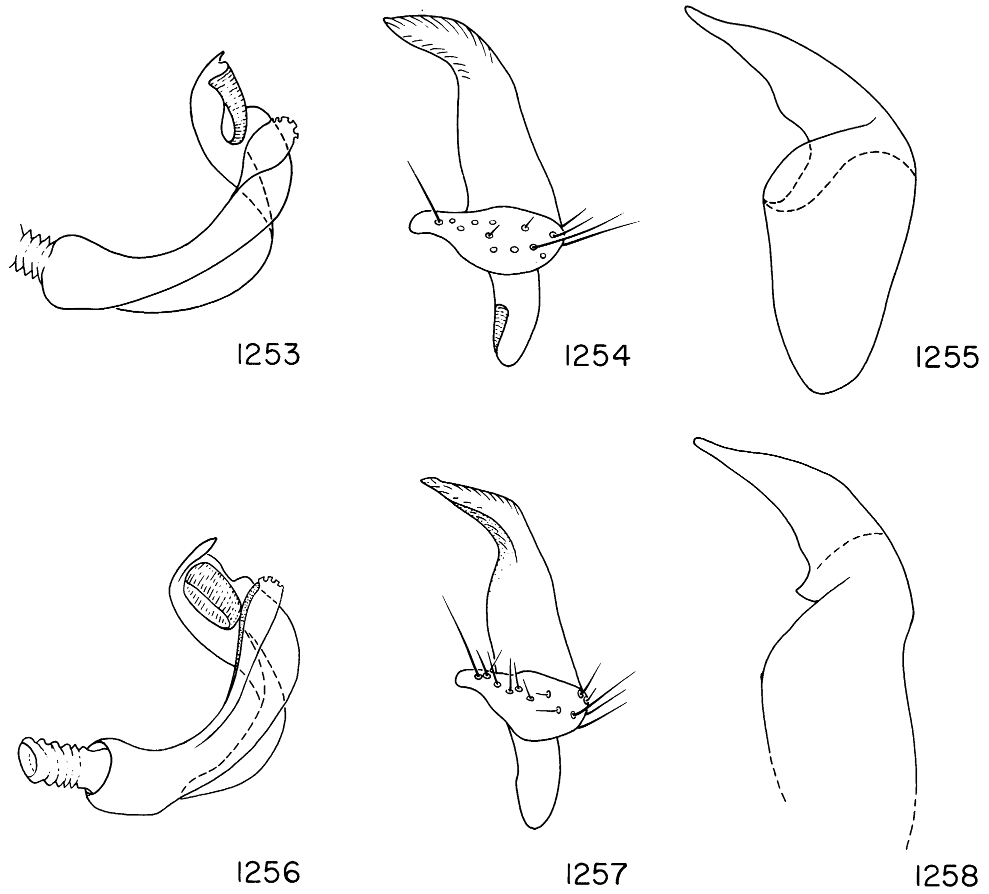
ADDITIONAL SPECIMENS: VIET NAM: Dalat, 1500 m., September 26–27, 1960 (Gressitt; Bishop), 2♂♂, 1♀.

Ellenia obscuricornis (Poppius)

Figures 1248, 1249, 1259–1266

Marshalliella obscuricornis Poppius, 1914a, p. 76.
Marshalliella orientalis Poppius, 1915, p. 69. NEW SYNONYMY.
Ellenia obscuricornis Schuh, 1974, p. 158.

DIAGNOSIS: Recognized by the eyes which occupy only about two-thirds the height of the head, the head extending anteriorly from the eyes slightly less than the length of an eye, the relatively short labium which reaches midway between the apices of the pro- and meso-coxae, the relatively light-colored pronotum in combination with the black first antennal segment, the ventral longitudinal keel on the genital capsule of the male, and the form of the male genitalia (figs. 1264–1266), the vesica having barbules on the apical spine and about 10 notches subtending the secondary gonopore, and the left paramere with a strongly curved posterior process. In general appearance *obscuricornis* resembles *Ragmus importunitas* and *Badezorus*



FIGS. 1253–1258. *Ellenia* spp., male genitalia. 1253–1255. *E. novobritannicae*. 1253. Vesica. 1254. Left paramere. 1255. Phallotheca. 1256–1258. *E. novoguinensis*. 1256. Vesica. 1257. Left paramere. 1258. Phallotheca.

tyrianus and *importunitas* also in the form of the male genitalia.

MALE GENITALIA: Figures 1264–1266.

FEMALE GENITALIA: Posterior wall simple.

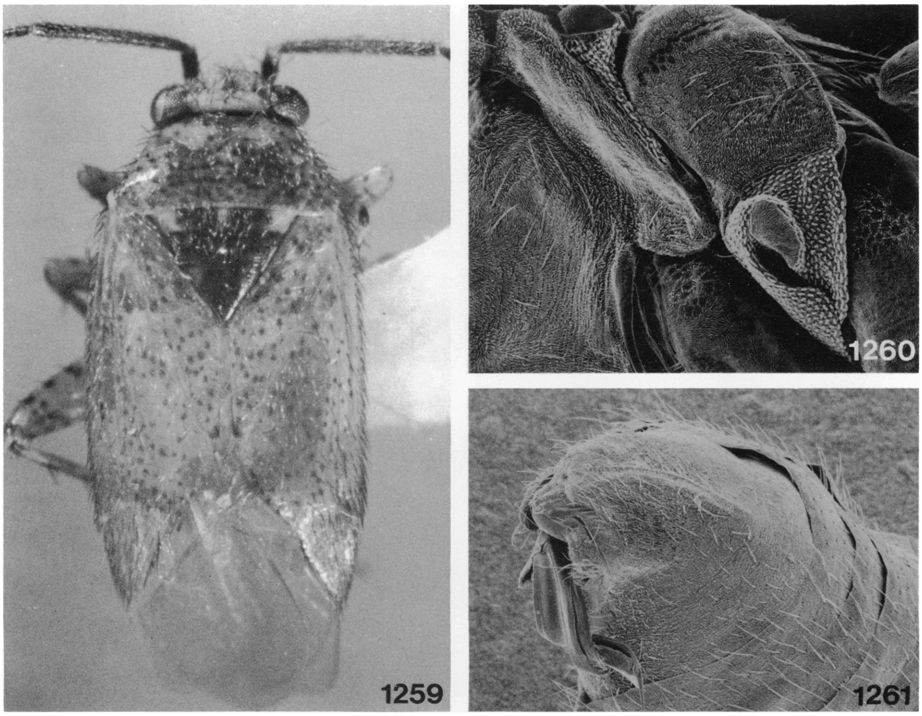
MEASUREMENTS: See Appendix.

DISTRIBUTION: Figures 1248 and 1249. Africa west to Taiwan in the north and New Guinea in the south.

SPECIMENS EXAMINED: INDIA (south): Kamataka, Kemmangundi, 1200–1500 m., November 11–16, 1977 (Copenhagen), 1♂, 1♀; Kamataka, Mudigere, *ca.* 900 m., November 2–10, 1977 (Copenhagen), 5♂♂, 11♀♀; Nilgiri Hills, Deyala, 3200 feet, October 1960 (Nathan; Berkeley), 1♀; Pulney Hills, Kodaicanal, 6500 feet, December 1953 (Nathan; Slater), 1♀; Shevaroy Hills, Yercaud, 4500 feet, December 1954 (Nathan; Slater), 1♂.

INDONESIA: *Java:* Tjibodas, July 31, 1965 (Winkeler; Bishop), 2♂♂, 1♀. *Sumatra:* Dolok Merangir, July 8, 1978 (and no date) (Diehl; AMNH), 2♂♂. *West Irian:* Kulima, 1400 m., February 19–22, 1960 (Maa; Bishop), 1♂; Star Mountains, Sibil Valley, 1245 m., October 18–November 8, 1961 (Quate; Bishop), 1♂; Vogelkop, Sururai Village area, W shore Lake Anggi Gita, 1850 m., July 25–August 1, 1957 (Hardy; Bishop), 3♂♂, 2♀♀; Wamena, 1700 m., February 10–25, 1960 (Maa; Bishop), 1♂, 1♀.

LAOS: *Sedone Prov.:* Paksong, May 18, 1965 (Ashlock; Bishop), 6♂♂, 4♀♀. *Vientiane*



FIGS. 1259–1261. *Ellenia obscuricornis.* 1259. Dorsal, ♂, Philippine Islands, Mindanao, 15 km. SW of Gingoog City. 1260. Lateral view of metathorax, showing scent-gland evaporatory area. 1261. Lateroventral view of genital capsule showing median keel.

Prov.: Ban Van Eue, November 30, 1965 (native collector; Bishop), 2♀♀; Ban Theuong, 18 km. NW of Xieng, Khouang, 1035 m., August 10–17, 1960, at light (Leach; Bishop), 2♀♀.

MALAYSIA: *Malaya:* Tanah Rata, May 20, 1939, ex cabbage (Pagden; BMNH), 1♂, 5♀♀. *Sabah:* West Coast Residency: Ranau, September 30–October 5, 1958 (Maa; Bishop), 1♂; Tenompok, 48 km. E of Jesselton, 1460 m., February 10–19, 1959 (Maa; Bishop), 14♂♂, 21♀♀.

PAPUA NEW GUINEA: *Central Prov.:* Tapini, 800–1000 m., November 1968 (Krauss; Bishop), 1♂. *Eastern Highlands Prov.:* Gomanigu Valley, *ca.* 3 mi. SW Mt. Otto, 7300 feet, August 16–18, 1956 (Woodward; Queensland), 3♂♂, 1♀; Aiyura, 1800 m., January 10, 1964 (Straatman; Bishop), 1♂; Goroka, 1530 m., April 30–May 3, 1959 (Michener; Bishop), 4♂♂, 4♀♀; Kassam, 48 km. E of Kainantu, 1350 m., November 7, 1959 (Maa; Bishop), 1♂; Tapu, 3 km. NW of Kainantu, 1650 m., October 22, 1959 (Maa; Bishop), 2♂♂, 2♀♀; Miramar, Asaro Valley, 1800 m., June 27, 1955 (Gressitt; Bishop), 1♂, 2♀♀. *East New Britain Prov.:* Vunabakan, 10 km. E of Keravat, 180 m., November 16–20, 1959 (Maa; Bishop), 1♂. *Morobe Prov.:* Finschhafen, Huon Peninsula, 10 m., April 9–16, 1963, MV light trap (Sedlacek; Bishop), 1♂; Mindik, 1200–1600 m., September 1968 (Krauss; Bishop), 1♀; Ulap, 800–1100 m., October 1968 (Krauss; Bishop), 1♂; Wau, 1100–1200 m., January 11, 1966, July 1968 (Krauss, Sedlacek; Bishop), 2♀♀. *Southern Highlands Prov.:* Mendi, 1660 m., October 6, 1958 (Gressitt; Bishop), 1♂. *Western Highlands Prov.:* Minj area, 1700 m., July 3, 1957 (Hardy; Bishop), 1♂; Tambul, 2200 m., July 2, 1963 (Sedlacek; Bishop), 1♂, 2♀♀. [*Prov. unknown*]: Daradee near Javarere, Musgrove River, September 4, 1959 (Maa; Bishop), 1♂, 1♀; Moife, 2100 m., October 7–14, 1959, swept in clearing (Maa; Bishop), 11♂♂, 10♀♀.

PHILIPPINE ISLANDS: *Luzon:* Albay

Prov.: Libon Caguscos, 200 m., May 11–17, 1965 (Torrevillas; Bishop), 4♂♂, 3♀♀; Mt. Mayon, 16 km. NW of Lagaspi, 900–1000 m., May 18, 1962 (Torrevillas; Bishop), 7♂♂, 1♀, Mountain Prov.: Jacmal Bunhian, 24 km. E of Mayoyao, 800–1000 m., April 9–May 13, 1967 (Torrevillas; Bishop), 7♂♂, 3♀♀; Liwo, 8 km. E of Mayoyao, 1000–1300 m., June 11–12, 1967 (Torrevillas; Bishop), 1♀; Ifugao, Mayoyao, 1000–1500 m., July 6, 1966, August 29, 1966, September 10–19, 1966 (Torrevillas; Bishop), 4♂♂, 2♀♀; Abatan Buguias, 60 km. S of Bontoc, 1800–2000 m., April 25–June 9, 1964 (Torrevillas; Bishop), 145♂♂, 112♀♀. *Mindanao:* Misamis Occidental, L. Duminagat, 1500 m., July 5, 1958, in rain forest (Milliron; Bishop), 1♂; Misamis Oriental: Balason, April 4–5, 1960 (Torrevillas; Bishop), 1♀; Hingangon, 20 km. S of Gingoog, 600–700 m., April 20–24, 1960 (Torrevillas; Bishop), 1♂; Mt. Balatukan, 15 km. SW of Gingoog, 1000–2000 m., April 27–30, 1960, at light (Torrevillas; Bishop), 7♂♂, 2♀♀; Mt. Empagatao, 1050–2000 m., April 19–30, 1961 (Torrevillas; Bishop), 1♂; Mt. Pomalihi, 21 km. W of Gingoog City, 800–1000 m., April 30, 1965, October 1–11, 1965, light trap (Torrevillas; Bishop), 7♂♂, 1♀; Zamboaga del Norte: Masawan-Gundawan, 1260–1350 m., July 16, 1958, jungle clearing (Milliron; Bishop); Masawan, trail to Mt. Malindang, 1290 m., July 5, 1968, rain forest (Milliron; Bishop), 1♂. *Negros Island:* Dumaguete, Camp Lookout, 1300 feet, February 15–April 15, 1961 (Schneirla and Reyes; AMNH), 1♀; Negros Oriental, L. Balinsasayao, October 1–7, 1959, light trap and sweeping (Quate; Bishop), 2♂♂, 3♀♀. *Palawan Island:* Mantalingajan, Pinigisan, 600 m., September 7, 1961 (Noona Dan; Copenhagen), 4♂♂, 3♀♀.

SRI LANKA: *Central Prov.:* Rangala, Knucle Mountains, 12 mi. ENE of Kandy, March 11, 1962 (Brinck, Andersson, Cederholm; Lund), 6♂♂, 5♀♀. *Sararagamuwa Prov.:* Hatherleigh, 1 mi. S of Rakwana, 1700 feet, February 28, 1962 (Brinck, Andersson, Cederholm; Lund), 1♂, 2♀♀. *Uva Prov.:* Beauvais, 5 mi. WNW Haputale, 4500 feet, March 3, 1962 (Brinck, Andersson, Cederholm; Lund), 2♂♂, 2♀♀; Gampha Estate 9 mi. NW of Haldummulla, March 2, 1962 (Brinck, Andersson, Cederholm; Lund), 1♀.

TAIWAN: Kwantzeling, Tainan Hsien, 250 m., April 6–7, 1965 (Yoshimoto; Bishop), 1♀; Taipei and vicinity, September 1964 (Maa; Bishop), 1♀.

THAILAND: *Chiangmai Prov.:* Doi Suthep, 1300 m., June 8, 1965 (Ashlock; Bishop), 1♂.

VIET NAM: Fyan, 1200 m., July 11–August 9, 1961 (Spencer; Bishop), 1♂; 17 km. NE of Dalat, 2000 m., May 3, 1960 (Quate; Bishop), 1♀.

DISCUSSION: *Ellenia obscuricornis* is a widespread, and at least in Africa, a rather variable species (see discussion in Schuh, 1974). Examination of a single male specimen in the Academie der Landwirtschaftswissenschaften (Deutsches Entomologisches Institut) from Fohosho, Taiwan, described by Poppius (1915) as *Marshalliella orientalis* indicates that it is synonymous with *obscuricornis.* The general pattern of coloration of the head, antennae, and body, and the pattern of spots at the setal bases on the femora agree with the condition found in specimens of *obscuricornis* from Africa as well as all of the remaining material from the study area.

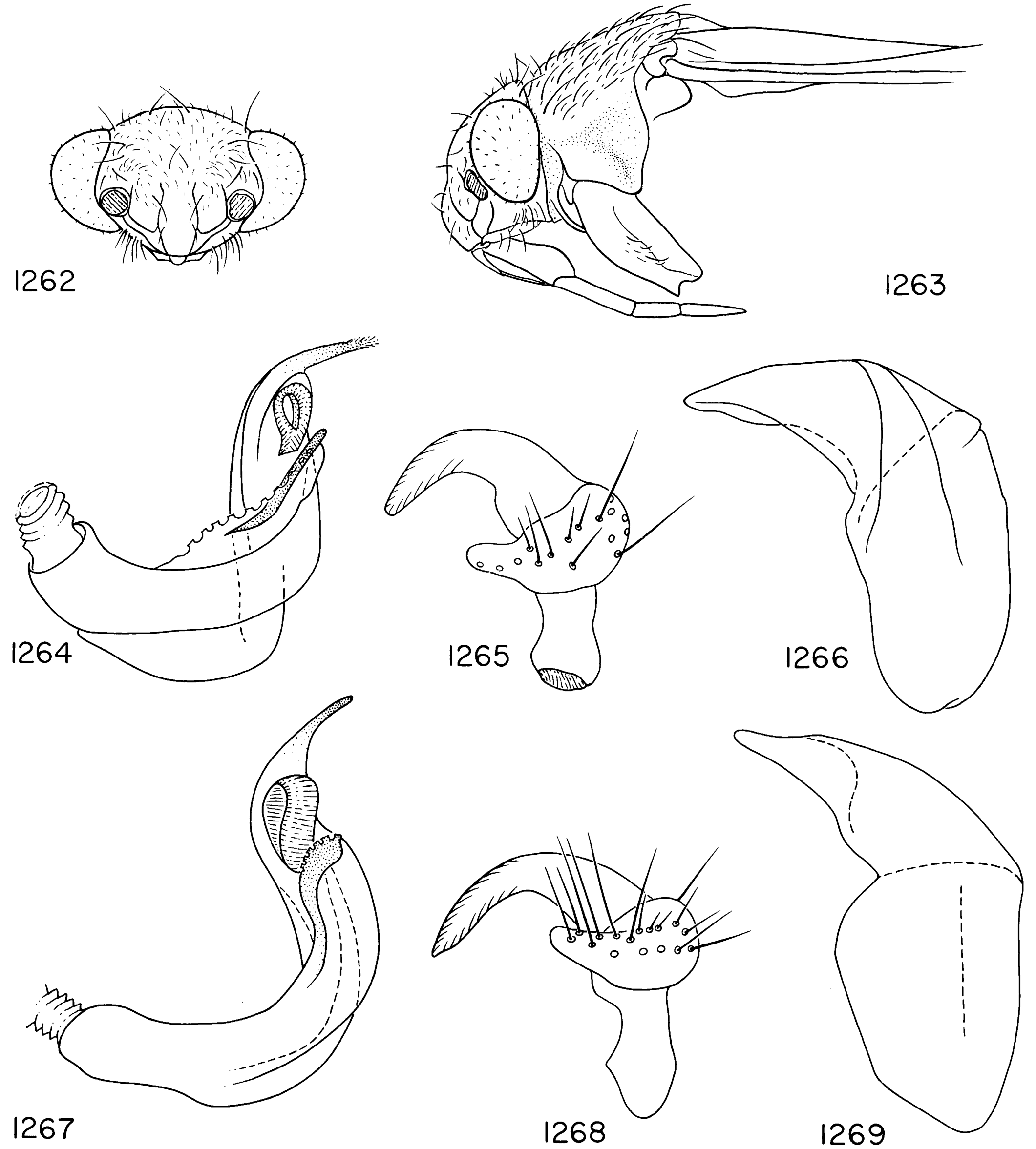
The name *obscuricornis* appears to have priority over *orientalis.* The publication date for the former is indicated as 1914 on fascicule 3 of volume 44 and also on the cumulative index to volume 44 of *Acta Societas Scientiarum Fennicae.* The publication date of fascicule 8 of *Archiv für Naturgeschichte* for 1914 is indicated as March 1915 on the cover of the issue. Thus, *Marshalliella orientalis* Poppius is a junior synonym of *Ellenia obscuricornis* (Poppius).

Ellenia philippinensis, new species

Figures 1248, 1252, 1267–1269

DIAGNOSIS: Recognized by its distinctive coloration, the anterior half of the body and wings and all femora black, and the posterior half of the body light yellowish (fig. 1252); parempodia weakly fleshy; unique among species currently assigned to *Ellenia* in lacking the ventral longitudinal keel on the male genitalia capsule.

DESCRIPTION: Macropterous male. Relatively large, length apex tylus-cuneal fracture 2.04, width pronotum 1.13; head, pronotum, mesoscutum, scutellum, corium and clavus to just anterior to apex of clavus, and all fem-



FIGS. 1262–1269. *Ellenia* spp. 1262–1266. *E. obscuricornis.* 1262. Frontal view of head. 1263. Lateral view of head and prothorax. 1264. Vesica. 1265. Left paramere. 1266. Phallotheca. 1267–1269. *E. philippinensis.* 1267. Vesica. 1268. Left paramere. 1269. Phallotheca.

ora black; posterior half of hemelytra hyaline, weakly infuscate along veins; abdomen posterior to base of ovipositor yellowish; antennae black except basal three-fifths of segment two dirty yellow; tibiae and tarsi dirty yellow, tibial spines black with black bases proximally, tarsi infuscate distally.

Eyes occupying most of height of head in lateral view, head projecting anteriorly beyond eyes by about the length of the eyes; labium just attaining apex of metacoxae; buccal cavity oval, gula obsolete; posterior margin of pronotum excavated in a weakly angulate manner across mesoscutum; genital capsule of male without ventral longitudinal keel.

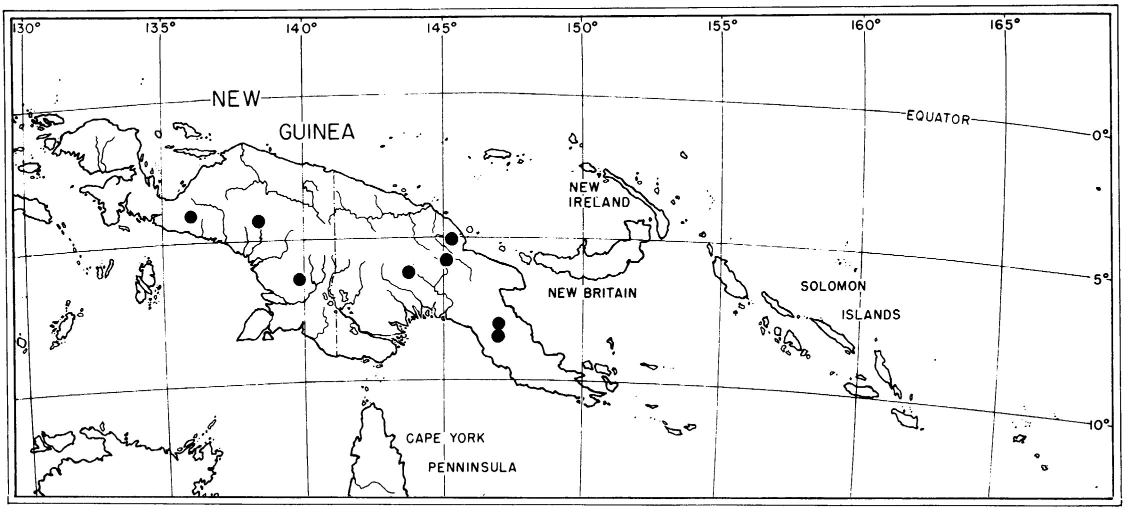


FIG. 1270. Distribution of *Gressittocapsus rugulosus.*

MALE GENITALIA: Figures 1267–1269. Vesica with an elongate slender apical spine, secondary gonopore subtended by five or six notches; phallotheca relatively stout and L-shaped; left paramere with posterior process elevated and strongly curved, similar to *obscuricornis.*

FEMALE: Macropterous. As in male except eyes slightly smaller.

FEMALE GENITALIA: Not examined.

ETYMOLOGY: Named for its occurrence in the Philippine Islands.

DISTRIBUTION: Figure 1248. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Mountain Prov., Abatan, Baguias, 60 km. W of Bontoc, 1800–2000 m., May 22–31, 1964, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

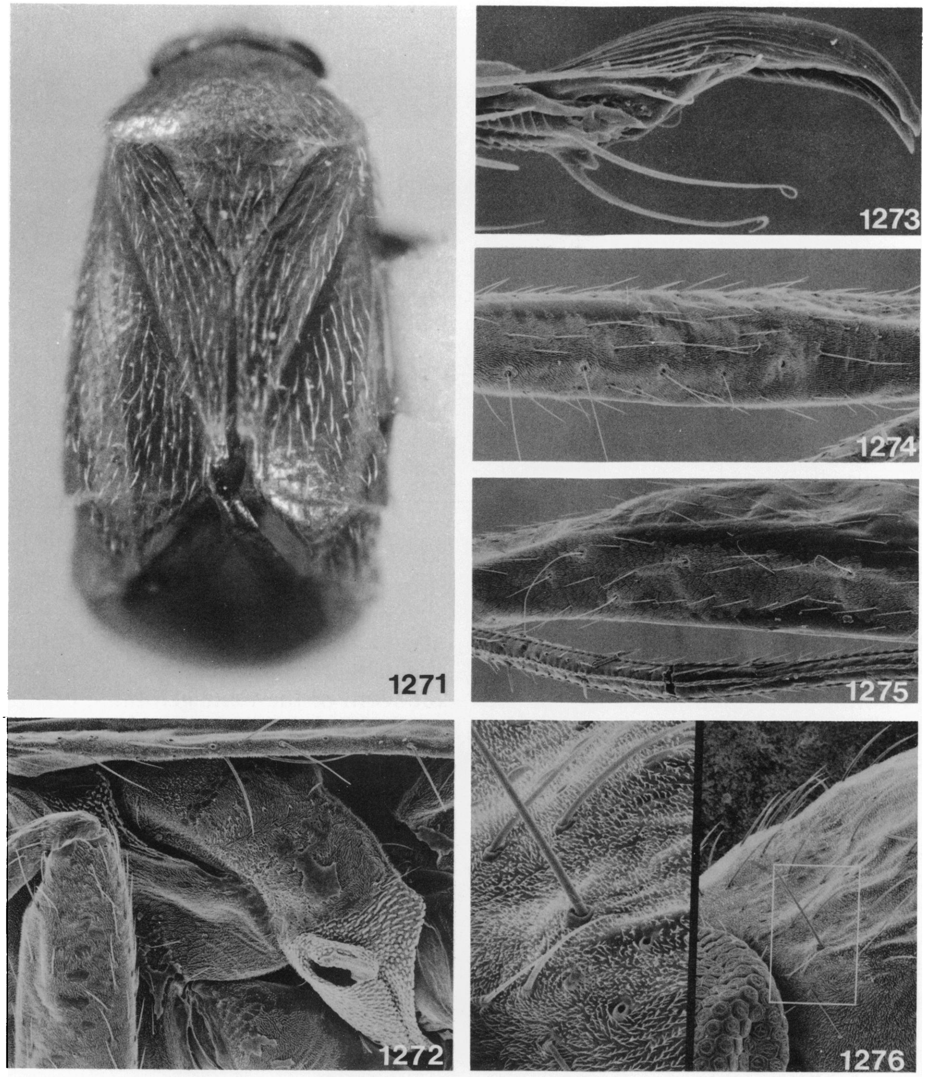
PARATYPES: Same data as holotype, but also May 4–21, 1964 (AMNH, Bishop), 4♂♂, 2♀♀. PHILIPPINE ISLANDS: *Palawan Island:* Mantalingajan, Pinigisan, 600 m., September 22, 1961 (Noona Dan; Copenhagen), 1♂.

GRESSITTOCAPSUS, NEW GENUS

DIAGNOSIS: Recognized by the nearly vertical head with a carinate posterior margin of the vertex, the rugulose dorsum, the hemelytra extending well beyond the apex of the abdomen and strongly declivous at the cuneal fracture, the red to castaneous coloration, and the form of the male genitalia, especially the "bag-like vesica" and the left paramere with its elaborate hornlike processes (figs. 1281–1283).

DESCRIPTION: Macropterous male. Body form compact to elongate, range length apex tylus-cuneal fracture 1.63–1.72, range width pronotum 0.73–0.78; reddish brown to castaneous, occasionally with light markings; pronotum conspicuously rugulose, hemelytra less so; anterolateral angles of pronotum with a single erect spine (fig. 1276); dorsum covered with reclining, curved, golden common setae; thoracic pleuron glabrous, abdomen basally with short reclining setae, genital capsule and two preceding abdominal sternites with long, golden, reclining or suberect setae; meso- and meta-femoral trichobothria as in figures 1274 and 1275.

Head declivent, vertex nearly vertical, posterior margin carinate and weakly concavely curving between eyes, vertex shallowly depressed between eyes; eyes occupying about three-fifths of height of head, emarginate anteriorly; antennae inserted above ventral margin of eyes by a distance approximately equal to diameter of antennal fossa, fossa contiguous with anterior margin of eye (figs. 1277, 1278); antennal segment one elongate, weakly pedunculate, length nearly equal to



FIGS. 1271–1276. *Gressittocapsus rugulosus.* 1271. Dorsal view, holotype. 1272. Lateral view of metathorax. 1273. Pretarsus. 1274. Mesofemur, showing trichobothria. 1275. Metafemur, showing trichobothria. 1276. Anterolateral angle of pronotum, showing location of erect spine (right) and detail of spine (left).

interocular space, segment two one and one-half times as long as width of head, increasing in diameter distally to about diameter of segment one, segments three and four subequal in diameter, slightly less than proximal diameter of segment two, combined length about equal to length of segment two; buccal cavity broadly oval, bucculae narrow, gula short, inclined; labium reaching at least to apices of metacoxae; pronotum relatively short, calli indistinct, not rugulose, anterior and lateral margins convexly rounded, anterolateral and posterolateral angles broadly rounded; mesoscutum exposed, separated from scutellum by a shallow, sinuous impression; scutellum smooth, nearly flat; hemelytra long, projecting far beyond apex of abdomen, rounded transversely, strongly depressed along claval suture, very strongly deflexed at cuneal fracture; corium weakly convexly rounded laterally, inner margin sinuous; small cell of membrane triangular, large cell with posterior margin smoothly rounded; membrane densely covered with minute spicules easily visible at 64×; metathoracic scent-gland evaporatory area as in figure 1272; pro- and meso-femora elongate rectangular, more or less parallel-sided, metafemora somewhat enlarged, dorsal surface curved; pro- and meso-tibiae with reclining pale setae of length about equal to tibial diameter, all tibiae with a few pale, semierect spines of length about equal to tibial diameter; only metatibiae with rows of minute black spicules; metatarsal segment one about two-thirds length of segment two, segment two about two-thirds length of segment three, claws broad basally, smoothly curved, pulvilli minute, parempodia setiform, apices bent (fig. 1273).

Male Genitalia: Figures 1281–1283. Vesica curved, twisted, secondary gonopore well developed, subapical, apical vesical processes membranous; phallotheca L-shaped, biramous apically; left paramere large, complex, modified from typical form found in Phylinae, with additional sclerotized horn-like processes; right paramere spoon-shaped, basal shaft wanting.

Female: Macropterous. Basic structure, surface texture, and vestiture as in male.

Female Genitalia: Not examined.

Type Species: *Gressittocapsus rugulosus,* new species.

Etymology: Named for J. L. Gressitt; masculine.

Distribution: Figure 1270. New Guinea.

Discussion: *Gressittocapsus* is somewhat unusual among the Phylinae with its rugulose dorsum, the long declivent hemelytra, and the form of the male genitalia.

Gressittocapsus rugulosus, new species

Figures 1270–1283

Diagnosis: Recognized by the features given in the generic diagnosis, by its size, and by the structure of the male genitalia.

Description: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture 1.66, width pronotum 0.89; basic coloration reddish to castaneous, venter and lower half of face usually appearing darker than dorsal surface of body; proximal two-thirds of antennal segment one, base and apex narrowly, and narrow band mesially on antennal segment two, distal two-thirds of all femora, and all tibiae and tarsi yellow; apical margin of corium along cuneal fracture nearly white.

Surface texture, vestiture and structure as in generic description; labium reaching to apex of metacoxae.

Male Genitalia: Figures 1281–1283.

Female: Macropterous. Basic coloration and structure as in male.

Female Genitalia: Not examined.

Measurements: See Appendix.

Etymology: Named for the texture of the dorsum.

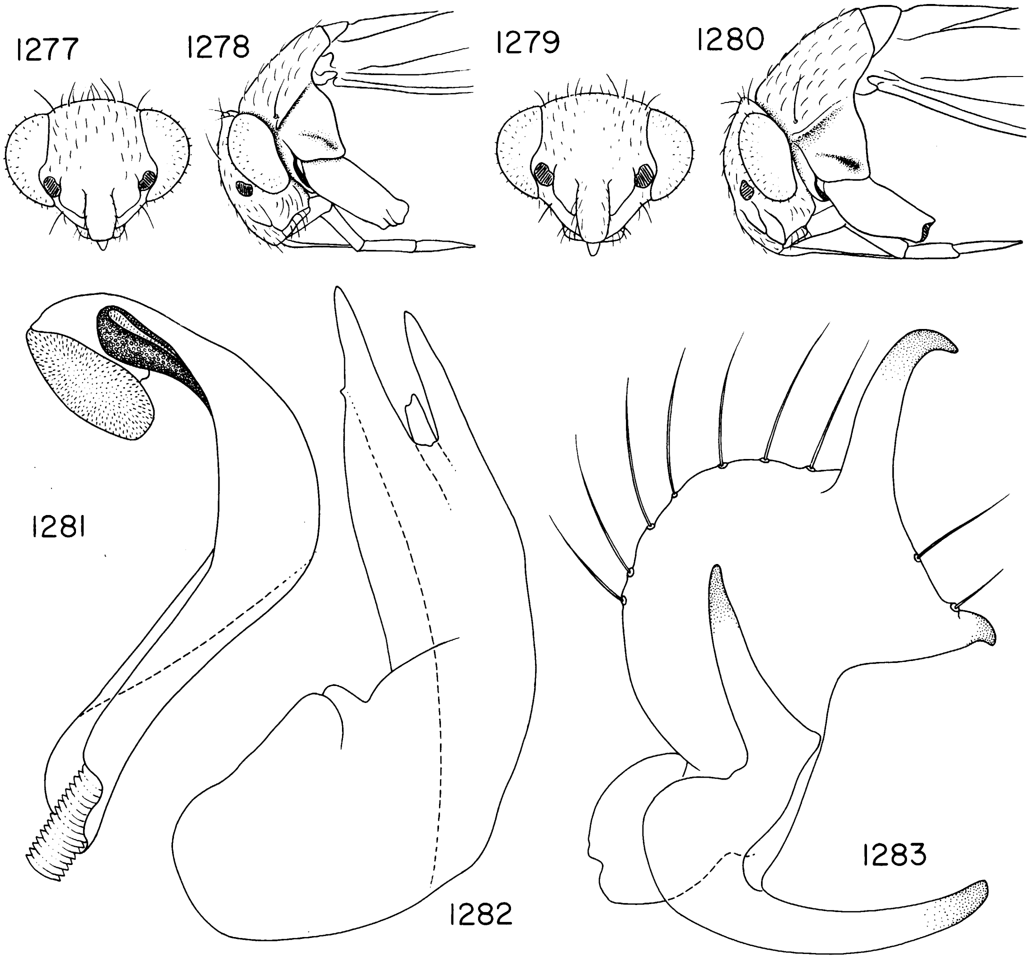
Distribution: Figure 1270. New Guinea.

Holotype ♂: INDONESIA: *West Irian:* Wisselmeren, Waghete, Tigi Lake, 1700 m., August 17, 1955, J. L. Gressitt collector; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: INDONESIA: *West Irian:* Wisselmeren: Enarotadi, 1900 m., August 19, 1955 (Gressitt; Bishop), 1♂; Itouda, Kamo Valley, 1500 m., August 14, 1955 (Gressitt; Bishop), 1♂, 3♀♀; Urapura, Kamo Valley, 1530 m., August 10, 1955 (Gressitt; Bishop), 1♂; Swart Valley, Karubaka, 1300–1550 m., November 5–20, 1958 (Gressitt; AMNH, Bishop), 3♂♂, 9♀♀; Swart Valley, west side, 1400–2000 m., November 10–19, 1958 (Gressitt; Bishop), 3♀♀.

Additional Specimens: INDONESIA: *West Irian:* Bokondini, 40 km. N of Baliem Valley, *ca.* 1300 m., November 5–11, 1961 (Quate; Bishop), Nabire S of Geelvink Bay, 0–30 m., July 2–9, 1962 (Gressitt; Bishop), 2♂♂, 1♀. PAPUA NEW GUINEA: *Madang Prov.:* Adelbert Mountains, Wanuma, 800–1000 m., October 26–27, 1958 (Gressitt; Bishop), 2♀♀; Mt. Wilhelm, 3000 m., July 4, 1955 (Gressitt; Bishop), 1♀. *Morobe Prov.:* Wau, Edie Creek, 2500 m., November 22, 1963 (Gressitt; Bishop), 1♀. *Southern Highlands Prov.:* Mendi, 1660 m., October 8, 1958 (Gressitt; Bishop), 1♀. Mt. Kaindi, 2350 m., November 24, 1971, ex *Nothofagus* sp. (Tawi; Bishop), 1♂. [*Prov. unknown*]: Eliptamin Valley, 1200–1350 m., June 19–23, 1959 (Brandt; Bishop), 1♀.

Discussion: The only host information available for this species is a single record of occurrence on *Nothofagus* sp.



FIGS. 1277–1283. *Gressittocapsus rugulosus.* 1277. Frontal view of head, ♂. 1278. Lateral view of head and prothorax, ♂. 1279. Frontal view of head, ♀. 1280. Lateral view of head and prothorax, ♀. 1281. Vesica. 1282. Phallotheca. 1283. Left paramere.

Ten specimens in addition to those listed, all from New Guinea, represent one, possibly more, additional species of *Gressittocapsus,* and are deposited in the B. P. Bishop Museum.

LOPUS HAHN

Lopus decolor Fallén

Capsus decolor Fallén, 1807, p. 102.

DISCUSSION: Diagnoses and illustrations of the male genitalia abound in the European literature (e.g., Wagner, 1975). This species, which is now widely distributed in the Northern Hemisphere, is apparently introduced into New Zealand. The first available specimens, as noted below, were collected in 1979.

SPECIMENS EXAMINED: NEW ZEALAND: Cavalli Islands, Matukawani Island, January 2, 1979, sweeping grassland (Roberts; DSIR), 2♂♂, 1♀.

MALAYSIAMIRIS, NEW GENUS

DIAGNOSIS: Recognized by its very small- to moderate-size (range length apex tylus-cuneal fracture 1.15–1.85, range width pronotum 0.65–1.05), the slightly to greatly enlarged second antennal segment (not enlarged in *couleeensis*), the single type of pubescence on the dorsum (varying from setiform and pale to somewhat woolly and sericeous), and for most species the distinctive male genitalia with the vesica having the elaborate spicular process or processes arising from the central portion and basad of the secondary gonopore (e.g., figs. 1299, 1308, 1325); the left paramere boat-shaped. Most closely resembles *Malaysiamiroides,* but the latter group without the second antennal segment enlarged, the vesica without the median spicular structures (although the vesica has definite spicules), and the left clasper distinctly splayed out with a large well-developed anterior process, somewhat reminiscent of *Decomia,* certain Pilophorini, and *Pseudosthenarus* (Schuh, 1974, pp. 239, 243). See also discussion.

DESCRIPTION: Macropterous male. Very small to medium-sized, range length apex tylus-cuneal fracture 1.15–1.85, range width pronotum 0.65–1.05; coloration yellowish to reddish or maroon-castaneous; dorsal surface smooth, dull to weakly shining, covered with a single type of moderately long, subappressed pubescence, often pale and setiform (figs. 1286–1288), sometimes woolly and sericeous (fig. 1320); all antennal segments clothed with fine reclining short pubescence, or segments one and two with heavy, dark, reclining setae, segment one with several stout, erect, black spines, segments three and four with several semierect setae about the length of diameter of segment; eyes with short or conspicuous interommatidial setae; anterolateral angles of pronotum with a long erect spine; all femora anteapically with a pair of moderately long semierect spines, and apically with a pair of shorter, reclining spines; tibiae with scattered erect or semierect spines, those of metatibiae up to four times length of tibial diameter; all tibiae with several rows of tiny spicules.

Head declivent to weakly prognathus (figs. 1296, 1324), often distinctly concave behind, sometimes obscuring anterior margin of pronotum; tylus usually barely visible from above, although head flattened and tylus rather strongly produced in some species; posterior margin of vertex weakly concave to nearly straight or weakly sinuous, margin either carinate (not an elevated carina) or smoothly rounded; eyes extending ventrally almost to bucculae in some species, genae narrow or obsolete; eyes weakly to distinctly emarginate at antennal insertion; buccal cavity short, elliptical or parallel-sided, gula varying from about length of buccal cavity to obsolete; labium reaching from apex of procoxae to base of metacoxae; antennal segment one short, stout, pedunculate, second segment about as long as width of head, weakly (fig. 1288) to greatly enlarged (fig. 1313), often somewhat fusiform, segments three and four very slender, subequal in diameter; pronotum transverse, either weakly rounded or flattened, lateral margins nearly straight or weakly convex, posterior margin straight to weakly excavated across mesoscutum, calli at most weakly developed; mesoscutum exposed, demarcated from scutellum by a fine impressed line, either weakly sinuous or occasionally V-shaped; scutellum smooth, either transversely rounded, or nearly flat; corium laterally nearly straight to weakly convexly rounded, particularly on posterior one-half, cuneus sometimes elongate, cuneal fracture directed anteromesially, cuneal incisure obsolete to pronounced; metathoracic scent-gland evaporatory area as in figure 1289; pro- and meso-femora elongate, more or less rectangular or weakly tapering, metafemora weakly to moderately swollen; claws elongate, smoothly curved, broadening at base; pulvilli small or minute, parempodia setiform (figs. 1290, 1291).

MALE GENITALIA: Vesica strongly bent or twisted, proximal section broad, usually with a more or less complex, heavily sclerotized spicular process, arising mesially (figs. 1302, 1304), secondary gonopore apical or subapical, vesica often with one or two distal spinelike processes of varying length (figs. 1299, 1308); phallotheca forming a strong right-angle bend, opening usually large and conspicuous; basal expanded portion of phallotheca usually with distinctive heavy sclerotization in form of crescentic area subtending right-angle bend and a straplike area on outer edge (figs. 1301, 1330); left paramere boat-shaped, typically phyline (figs. 1300, 1303); right paramere small, lanceolate.

FEMALE: Macropterous. Basic structure, vestiture, and coloration as in males, eyes somewhat smaller and vertex relatively wider.

FEMALE GENITALIA: Not examined.

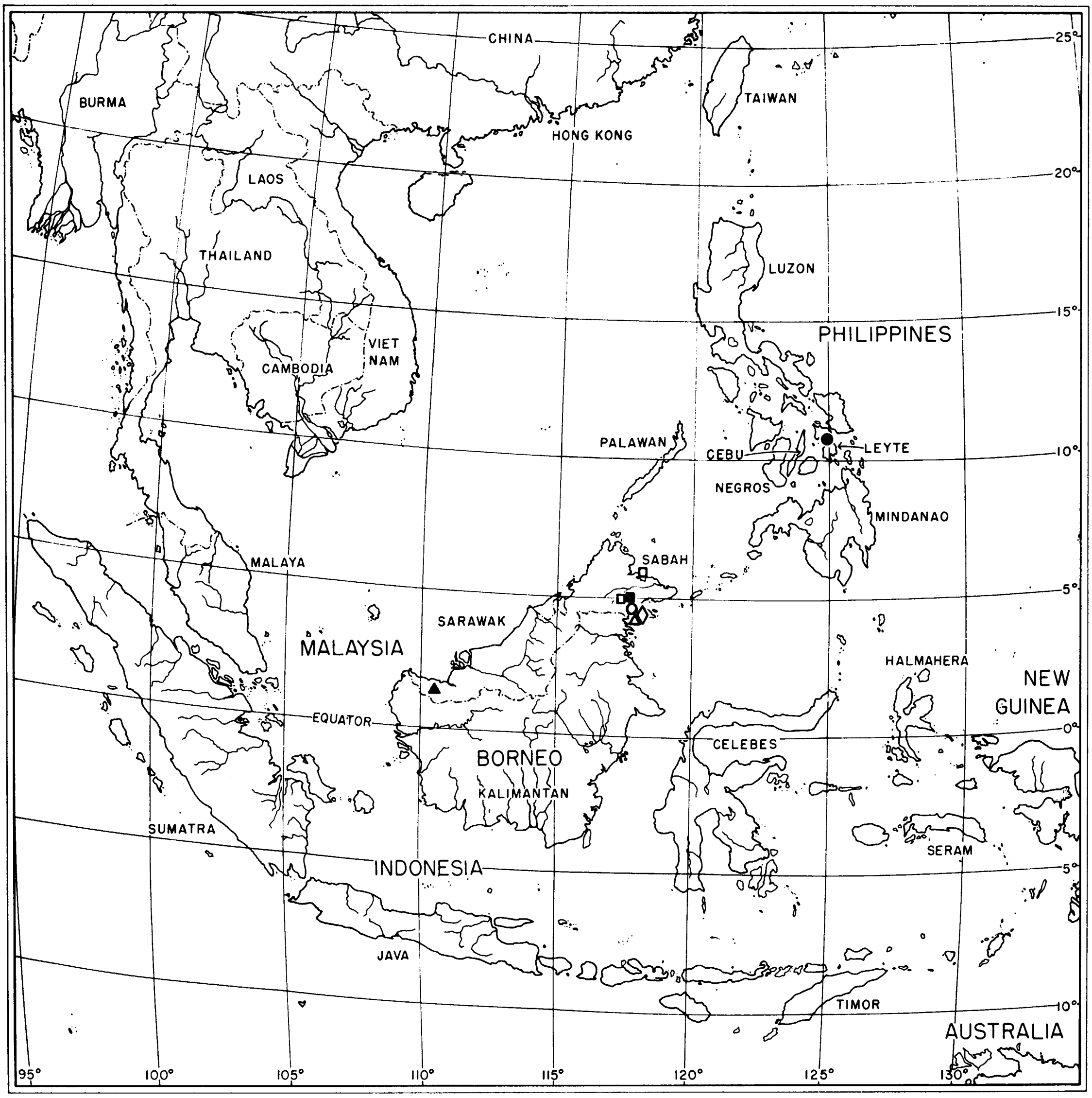

CHINA
BURMA
TAIWAN
HONG KONG
LAOS
THAILAND
LUZON
PHILIPPINES
VIET NAM
CAMBODIA
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
SABAH
MALAYA
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 1284. Distribution of *Malaysiamiris* spp. *M. bellae* (□); *M. cyanocephalus* (◇); *M. elongatus* (○); *M. leyteanus* (●); *M. magnicornis* (▲); *M. submagnicornis* (■); *M. tawauanus* (△).

TYPE SPECIES: *Malaysiamiris bellae,* new species.

ETYMOLOGY: Named for the occurrence of most known species in Malaysia; masculine.

DISTRIBUTION: Figures 1284 and 1285. Northern Borneo, Malay Peninsula, Philippine Islands, New Caledonia.

DISCUSSION: Although the enlarged second antennal segment appears to be useful in recognizing some species placed in *Malaysiamiris,* this characteristic is not unequivocal as it does not occur in all members of the genus and is known to occur also in *Campylomma* species from the Marquesas Islands and Tahiti as well as in the genera *Atractotomus* and *Lepidopsallus.* The structure of the vesica of the male is a much more reliable diagnostic character.

The only host-ecological information is for *novocaledonicus* which was recorded occurring on *Tristania* flowers and in dry scrub.

ADDITIONAL SPECIMENS: Eight male speci-

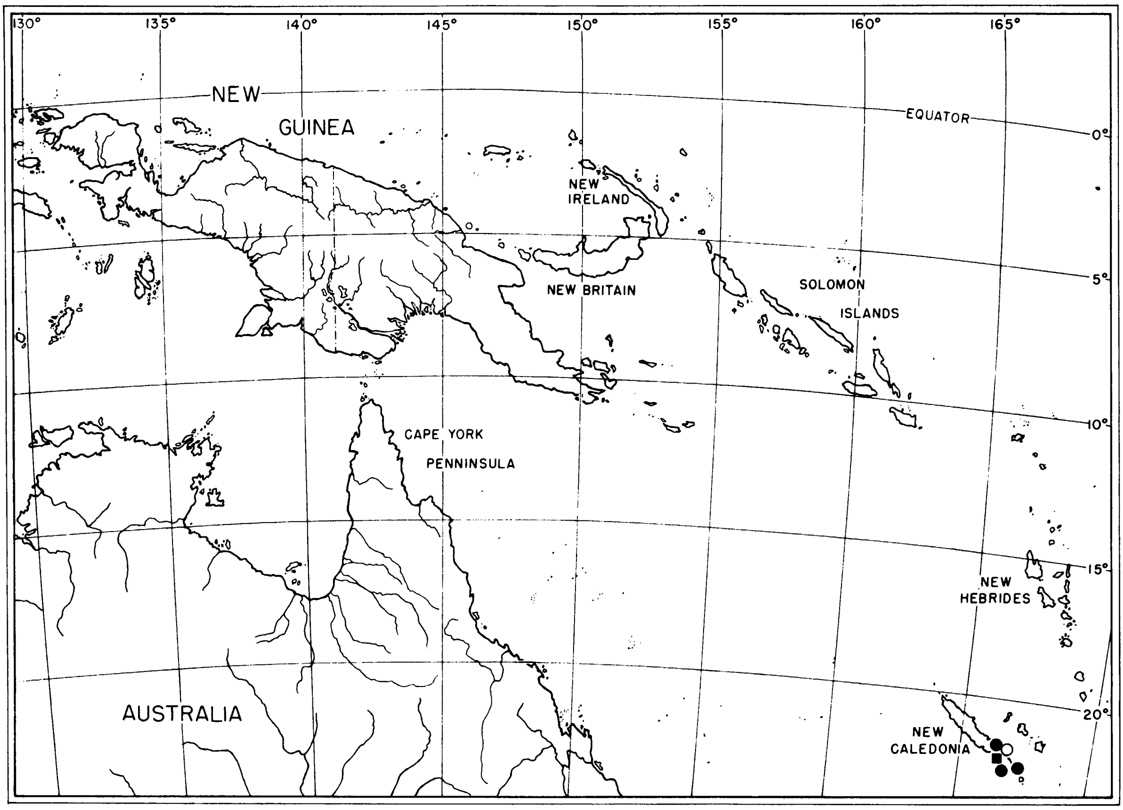


FIG. 1285. Distribution of *Malaysiamiris* spp. (continued). *M. couleeensis* (■); *M. lacsensis* (○); *M. novocaledonicus* (●).

mens are known which may represent undescribed species of *Malaysiamiris* or *Malaysiamiroides*. Six of these are from northern Borneo, and one from Malaya (Bishop); the last is from Thailand (CAS).

Eighteen female specimens (Bishop) probably represent specimens of *Malaysiamiris* or *Malaysiamiroides*; one is from Thailand, two from Malaya, and the remainder from Sabah (see also discussion under *couleeensis*).

KEY TO MALES OF *MALAYSIAMIRIS* AND *MALAYSIAMIROIDES*

1. Dorsum clothed with weakly woolly, sericeous pubescence (figs. 1307, 1311, 1320); New Caledonia 2

   Dorsum with vestiture of pale, recumbent or subappressed, simple setae (figs. 1286, 1288); Malaya, Northern Borneo, Philippine Islands 4

2. Body yellow, antennal segment two not enlarged; length apex tylus-cuneal fracture 1.82; male genitalia as in figures 1308–1310; New Caledonia .... *Malaysiamiris couleeensis*

   Body basically maroon; antennal segment two at least slightly enlarged 3

3. Body and all appendages deep maroon; length apex tylus-cuneal fracture 1.83; male genitalia see figures 1325–1327; New Caledonia. .... *Malaysiamiris lacsensis*

   Body generally faded maroon-brown; antennal segments one and two deep maroon; antennal segments three and four and all tibiae yellowish; length apex tylus-cuneal fracture 1.60; male genitalia as in figures 1325–1327; New Caledonia .... *Malaysiamiris novocaledonicus*

4. Body and head distinctly flattened, eyes bulging laterally, head projecting anteriorly and tylus distinctly visible as viewed from above; antennal segment two strongly enlarged, fusiform, deep maroon in color 5

Body and head sometimes weakly flattened, head distinctly declivent to nearly vertical, eyes rounded laterally and not conspicuously bulging, tylus at most barely visible as viewed from above; antennal segment two variable, from slender and light-colored to enlarged and more or less fusiform and dark-colored 6

5. General coloration maroon, dorsum lighter mesially; procoxae and pro- and meso-femora yellow-white; length apex tylus-cuneal fracture 1.78; male genitalia as in figures 1317–1319; Northern Borneo .... *Malaysiamiris magnicornis*

General coloration red-orange, including pro- and meso-femora; head brownish black; length apex tylus-cuneal fracture 1.83; male genitalia as in figures 1328–1330; Northern Borneo ... *Malaysiamiris submagnicornis*

6. Head dark brown, strongly contrasting with rather light orange body 7

Head and body more or less unicolorous, not contrasting, ranging from light orange to castaneous 8

7. Apex of corium and of cuneus conspicuously marked with red; cuneus elongate; length apex tylus-cuneal fracture 1.44, male genitalia as in figures 1342–1344; Northern Borneo .. *Malaysiamiroides fuscocapitatus*

Apex of corium and cuneus more densely pigmented than remainder of hemelytra, but not contrastingly red; cuneus not particularly elongate; length apex tylus-cuneal fracture 1.15, male genitalia as in figures 1302 and 1303; Northern Borneo .... *Malaysiamiris cyanocephalus*

8. Antennal segment two noticeably enlarged, tubular to weakly terete, dark colored; male genitalia with boat-shaped left paramere (fig. 1300), vesica as in figures 1299, 1304, etc. 9

Antennal segment two conspicuously enlarged, tubular or tapering proximally (not known for *Malaysiamiroides hirashimai*), not strongly dark-colored; male with a flattened, splayed-out left paramere (figs. 1352, 1355), right paramere often very large, vesica as in figure 1356 12

9. Procoxae and pro- and meso-femora and tibiae yellow-white, contrasting with maroon or brown body 10

Procoxae and pro- and meso-femora either maroon or brown, not contrasting with remainder of body, although pro- and mesotibiae light and contrasting 11

10. Basic coloration medium brown; length apex tylus-cuneal fracture 1.33; male genitalia as in figures 1314–1316; Philippine Islands .... *Malaysiamiris leyteanus*

Basic coloration maroon, head and pronotum generally lighter; length apex tylus-cuneal fracture 1.32; male genitalia as in figures 1299–1301; Northern Borneo .... *Malaysiamiris bellae*

11. Basic coloration castaneous; length apex tylus-cuneal fracture 1.41, male genitalia as in figures 1331–1333; Northern Borneo .. .. *Malaysiamiris tawauanus*

Basic coloration maroon; length apex tylus-cuneal fracture 1.35; male genitalia as in figures 1304–1306; Northern Borneo .... *Malaysiamiris elongatus*

12. Basic coloration dull brown; length apex tylus-cuneal fracture 1.38; male genitalia as in figures 1345–1347; Northern Borneo .. .. *Malaysiamiroides hirashimai*

Basic coloration light yellow-orange to more intense orange-red 13

13. Basic coloration light yellow-orange; length apex tylus-cuneal fracture 1.43; male genitalia as in figures 1354–1357; Northern Borneo ...... *Malaysiamiroides mirabilis*

Basic coloration orange-red; length apex tylus-cuneal fracture 1.50; male genitalia as in figures 1351–1353; Northern Borneo .. .. *Malaysiamiroides kuncheriai*

Malaysiamiris bellae, new species

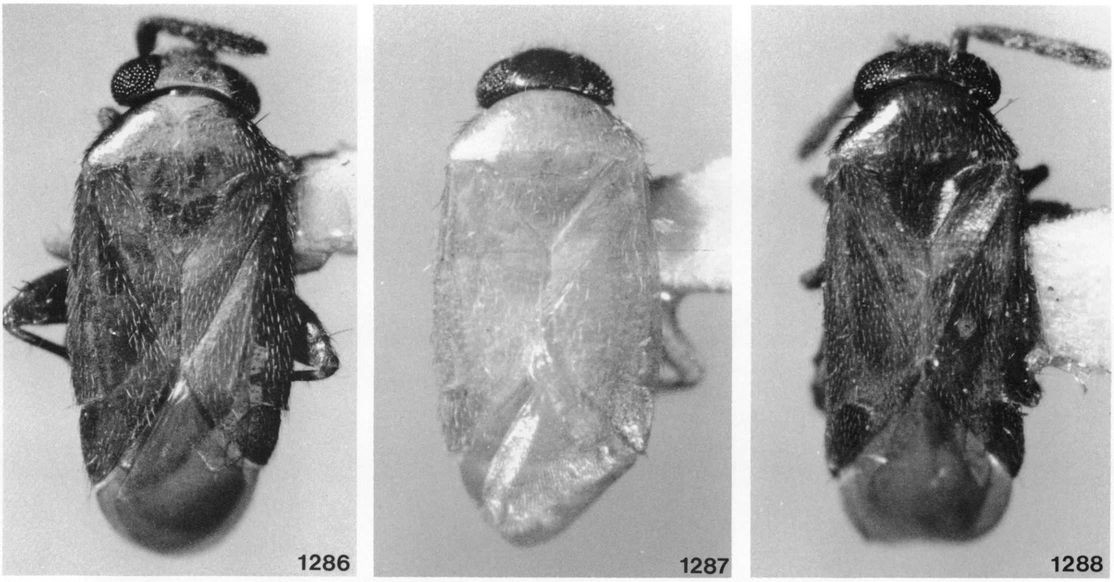
Figures 1284, 1286, 1295–1301

DIAGNOSIS: Recognized by the characters given in the key, especially the generally maroon coloration (fig. 1286) with contrasting white procoxae and pro- and meso-femora and tibiae and all tarsi, and the form of the male genitalia (figs. 1299–1301).

DESCRIPTION: Macropterous male. Very small, length apex tylus-cuneal fracture 1.32, width pronotum 0.73; basic coloration maroon; antennal segments one and two and metatibiae somewhat darker, nearly black; vertex and most of dorsal surface of pronotum dingy yellow; membrane infumate; antennal segments three and four, labium, gula, prosternal xyphus, procoxae, pro- and mesofemora and tibiae, and all tarsi nearly white.

Dorsum and venter generally covered with short, subappressed, pale simple setae; antennal segments one and two with reclining, relatively stout, nearly black setae and some longer nearly erect fine setae.

Body and head distinctly flattened, head



FIGS. 1286–1288. *Malaysiamiris* spp. 1286. *M. bellae*, holotype. 1287. *M. cyanocephalus*, holotype. 1288. *M. elongatus*, holotype.

directed anteroventrally (fig. 1296), tylus partially visible as viewed from above; head weakly concave behind; posterior margin of vertex concave between eyes, sharply rounded; antennal segments one and two noticeably enlarged, segment two weakly fusiform; eyes emarginate at antennal insertion (fig. 1295); genae narrow, gula about one-half length of buccal cavity; labium just surpassing posterior margin of procoxae; pronotum strongly flattened, lateral margins uniformly convexly rounded, posterior margin shallowly and evenly excavated across mesoscutum; scutellum flat; length of corium short relative to total length, accentuating weakly convexly rounded lateral margins; cuneal incisure distinct.

MALE GENITALIA: Figures 1299–1301.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Bella Galil.

DISTRIBUTION: Figure 1284. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.*: Tawau Residency, Forest Camp, 19 km. N of Kalabakan, October 22, 1962, K. J. Kuncheria collector; deposited in the B. P. Bishop Museum, Honolulu.

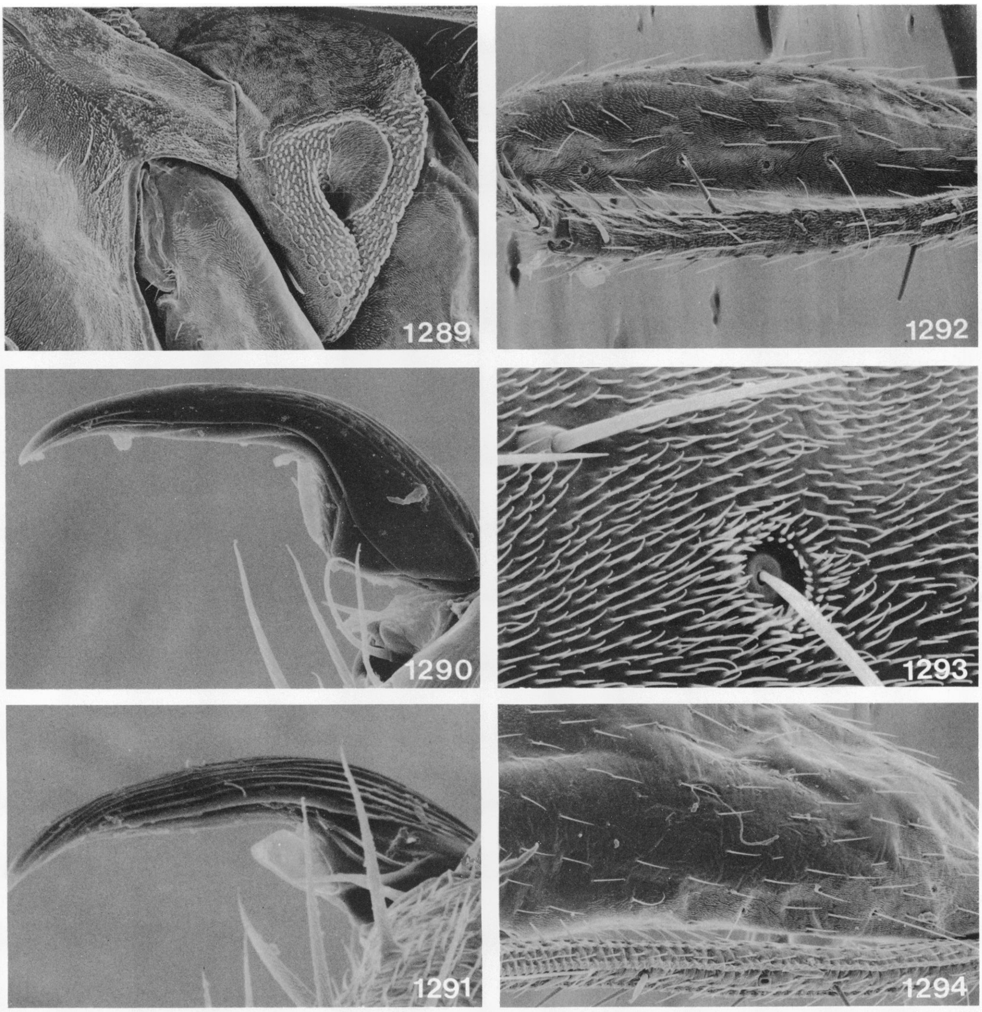
PARATYPES: MALAYSIA: *Sabah Prov.*: Tawau, Quoin Hill Cocoa Research Station, July 3–20, 1962, and September 5 and 19, 1962, light trap and malaise trap (Hirashima and Holtmann; AMNH, Bishop), 4♂♂, 4♀♀.

Malaysiamiris couleeensis, new species

Figures 1285, 1307–1310

DIAGNOSIS: Recognized by the characters given in the key, especially the relatively large size, the yellowish coloration, the slender second antennal segment, the weakly woolly, pale, sericeous vestiture (fig. 1307), and the structure of the male genitalia (figs. 1308–1310).

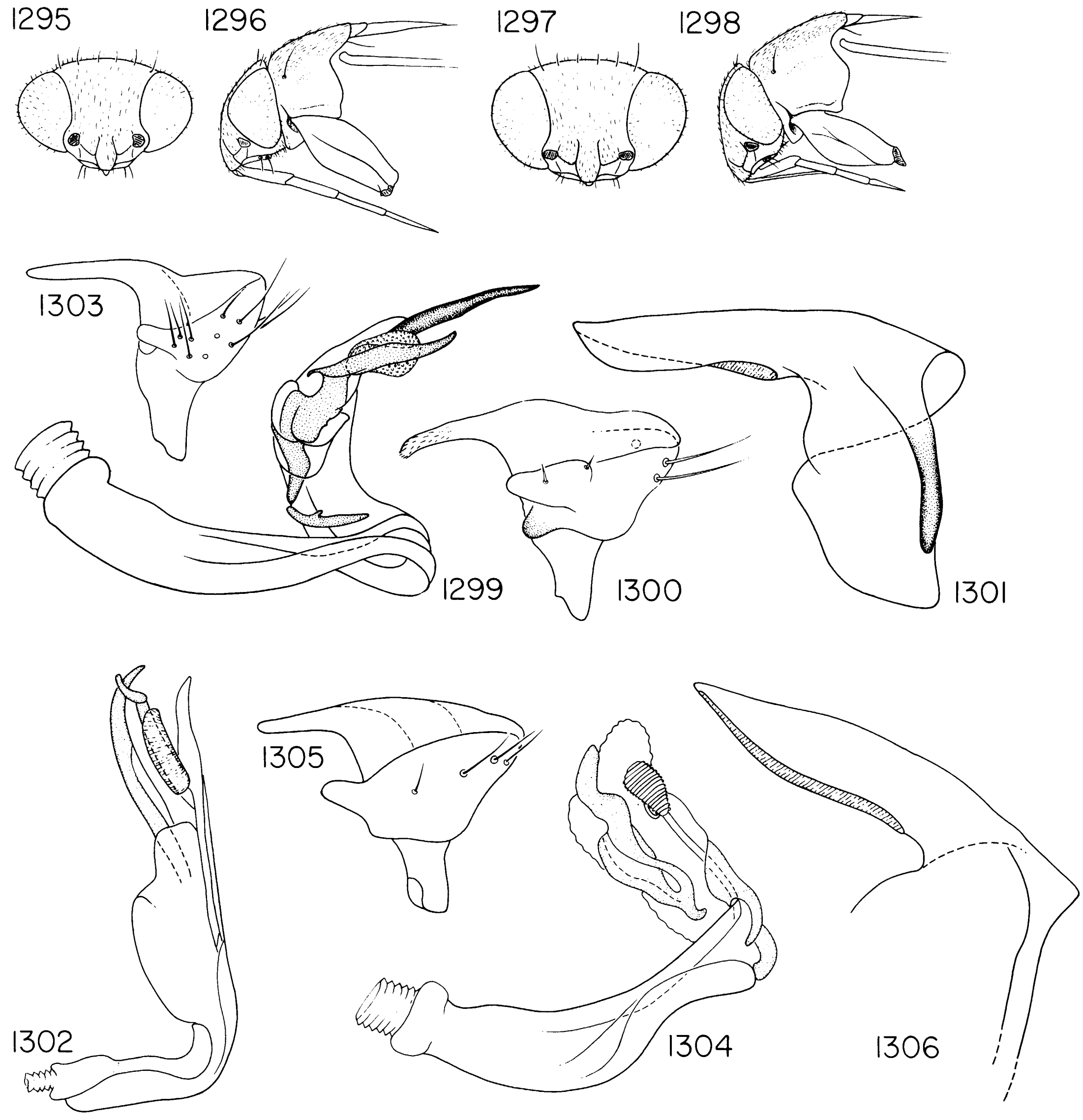
DESCRIPTION: Macropterous male. Relatively large, broadly ovoid, length apex tylus-cuneal fracture 1.82, width pronotum 1.03; general coloration yellow-white, mesoscutum weakly orange; dorsal vestiture weakly woolly, pale, sericeous; all antennal segments with reclining pale pubescence; interommatidial setae very short; metatibial spines pale, slightly longer than tibial diameter; pro- and



FIGS. 1289–1294. *Malaysiamiris elongatus.* 1289. Lateral view of metathorax showing scent-gland evaporatory area. 1290. Detail of inner surface of claw. 1291. Detail of outer surface of claw. 1292. Mesofemur, showing trichobothria. 1293. Detail of mesofemoral trichobothrium. 1294. Metafemora, showing trichobothria.

meso-tibiae with two rows, metatibiae with several rows of tiny spicules.

Head short, transverse in dorsal view, tylus not visible from above; head concave behind, conforming to and partially obscuring anterior margin of pronotum, posterior margin of vertex weakly concave, smoothly rounded; eyes occupying most of height of head in lateral view, genae about as wide as diameter of antennal segment one; eyes moderately emarginate at antennal insertion, fossae slightly removed from anterior margin of eye and placed just above ventral margin; gula obsolete; labium reaching to near apex of metacoxae; antennal segment two relatively slender, slightly less than greatest diameter of segment one, of nearly uniform diameter over entire length; pronotum weakly rounded, calli obscure, lateral margins weakly convex, posterior margin nearly straight; hemelytra distinctly rounded, transversely and declining laterally, lateral margins convex; cuneus relatively broad, cuneal fracture shallow; metafemora moderately enlarged.



FIGS. 1295–1306. *Malaysiamiris* spp. 1295–1301. *M. bellae.* 1295. Frontal view of head, ♂. 1296. Lateral view of head and prothorax, ♂. 1297. Frontal view of head, ♀. 1298. Lateral view of head and prothorax, ♀. 1299. Vesica. 1300. Left paramere. 1301. Phallotheca. 1302–1303. *M. cyanocephalus.* 1302. Vesica. 1303. Left paramere. 1304–1306. *M. elongatus.* 1304. Vesica. 1305. Left paramere. 1306. Phallotheca.

MALE GENITALIA: Figures 1308–1310.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

ETYMOLOGY: Named for La Coulee, New Caledonia.

DISTRIBUTION: Figure 1285. New Caledonia.

HOLOTYPE ♂: NEW CALEDONIA: Plaine des Lacs, February 2, 1963, C. M. Yoshimoto collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: NEW CALEDONIA: La Coulee, January 23, 1963 (Yoshimoto; AMNH, Bishop), 4♂♂, 4♀♀; 3 km. SE of La Coulee (Yoshimoto; Bishop), 1♂.

DISCUSSION: The general appearance of this

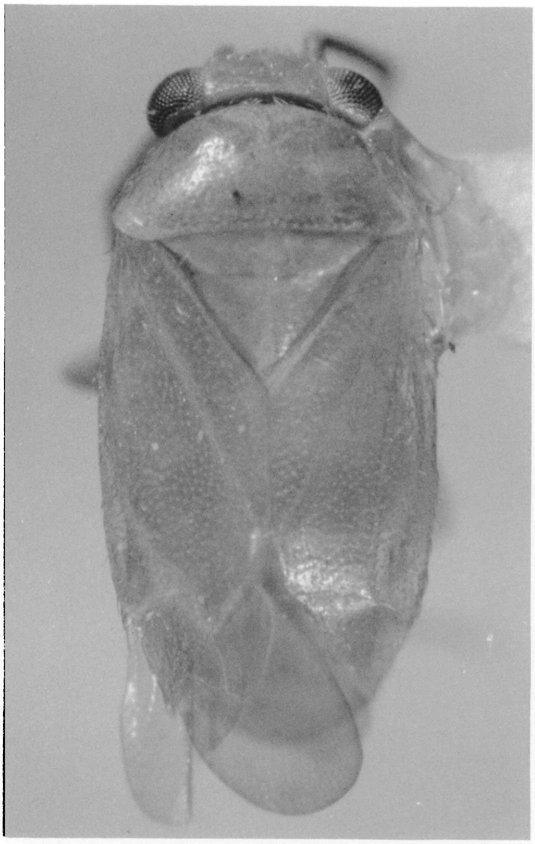


FIG. 1307. *Malaysiamiris couleeensis*, holotype.

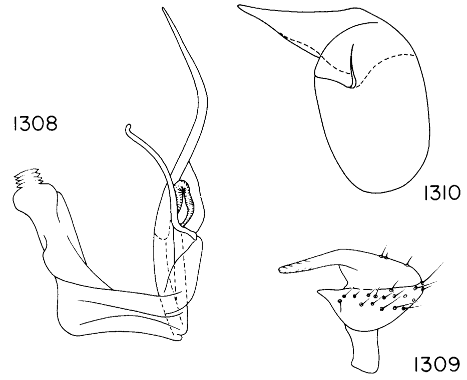
species is much like that of many *Campylomma* species, but the metafemora lack the characteristic row of spicules dorsally and the male genitalia seem to suggest a relationship with *M. lacsensis, M. novocaledonicus*, and other *Malaysiamiris* species from Borneo.

ADDITIONAL SPECIMENS: One male and three female specimens (Bishop) from New Caledonia apparently represent another species very near to *couleeensis*.

Malaysiamiris cyanocephalus, new species

Figures 1284, 1287, 1302, 1303

DIAGNOSIS: Recognized by the characters given in the key, especially by the small size, the head of nearly hemispherical form (fig. 1287), the dark head contrasting with the yellow-orange body (fig. 1287), and the form of the male genitalia (figs. 1302, 1303).



FIGS. 1308–1310. *Malaysiamiris couleeensis*. 1308. Vesica. 1309. Left paramere. 1310. Phallotheca.

DESCRIPTION: Macropterous male. Very small, head particularly, and remainder of body somewhat cylindrical in form, narrow, elongate, length apex tylus-cuneal fracture 1.15, width pronotum 0.63; basic coloration medium to light yellow-orange, cuneus somewhat darker; head and antennal segment one dark brown (other antennal segments missing in both known specimens); membrane pale (fig. 1287).

Body generally covered with reclining slender, pale setae of moderate length.

Head nearly vertical, tylus not visible from above; head concave behind, obscuring anterior pronotal margin; vertex between eyes weakly concave, posterior margin smoothly rounded; gula obsolete; ventral margin of eyes touching bucculae; eyes moderately emarginate at antennal insertion; posterior margin of vertex shallowly concave; antennal segments two, three, and four missing in both known specimens; labium reaching to apex of mesocoxae (missing in holotype); pronotum rounded anteriorly, flattened posteriorly, lateral margins convexly rounded, posterior margin nearly straight; scutellum nearly flat; corium long relative to width (fig. 1287), lateral margin weakly rounded on posterior one-half, cuneal incisure obsolete; metafemora weakly enlarged.

MALE GENITALIA: Figures 1302 and 1303.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the dark coloration of the head; from the Greek, *cyaneos,* dark, and *cephale,* head.

DISTRIBUTION: Figure 1284. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Tawau, Forest camp, 19 km. N of Kalabakan, November 7–10, 1962, malaise trap, Y. Hirashima collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPE: MALAYSIA: *Sabah Prov.:* Sandakan Residency, Sepilok Forest Reserve, Sandakan Bay (NW), 1–10 m., October 27, 1957, malaise trap (Gressitt; Bishop), 1♂.

Malaysiamiris elongatus, new species

Figures 1284, 1288–1294, 1304–1306

DIAGNOSIS: Recognized by the combination of characters given in the key, especially the elongate slender body, the uniform maroon coloration including all coxae and femora (fig. 1288), and the form of the male genitalia (figs. 1304–1306).

DESCRIPTION: Macropterous male. Very small, elongate, slender, parallel-sided, weakly flattened, length apex tylus-cuneal fracture 1.35; width pronotum 0.66; general coloration maroon; labium, pro- and meso-tibiae and all tarsi yellow (antennal segments three and four missing in all known specimens); membrane smoky.

Body generally covered with rather short, pale, subappressed, fine simple setae; antennal segments one and two clothed with short, reclining setae (not black) and some more slender semierect setae; meso- and metafemoral trichobothria as in figures 1292–1294.

Head transverse, concave behind, covering anterior margin of pronotum; tylus not visible as viewed from above; gula obsolete; ventral margin of eyes touching bucculae; labium slightly surpassing apex of procoxae; eyes conspicuously emarginate at antennal insertion; antennal segment one weakly enlarged, segment two moderately enlarged, cylindrical (segments three and four missing in known specimens); posterior margin of vertex distinctly concave, margin smoothly and sharply rounded; pronotum trapezoidal in outline, strongly rounded anteriorly, flattened posteriorly, lateral margins nearly straight, posterior margin conspicuously excavated across mesoscutum; lateral corial margins straight and parallel; cuneal incisure shallow, lateral margin of cuneus distinctly rounded, cuneus elongate; metathoracic scent-gland evaporatory area as in figure 1289; metafemora rather strongly enlarged; pretarsal structures as in figures 1290 and 1291.

MALE GENITALIA: Figures 1304–1306.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its elongate body form.

DISTRIBUTION: Figure 1284. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Tawau, Quoin Hill Cocoa Research Station, September 17, 1962, light trap, Y. Hirashima collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but also July 3–20, September 1–10, and October 3, 1962, and malaise trap and primary forest (Hirashima and Holtmann; AMNH, Bishop), 6♂♂, 5♀♀.

Malaysiamiris lacsensis, new species

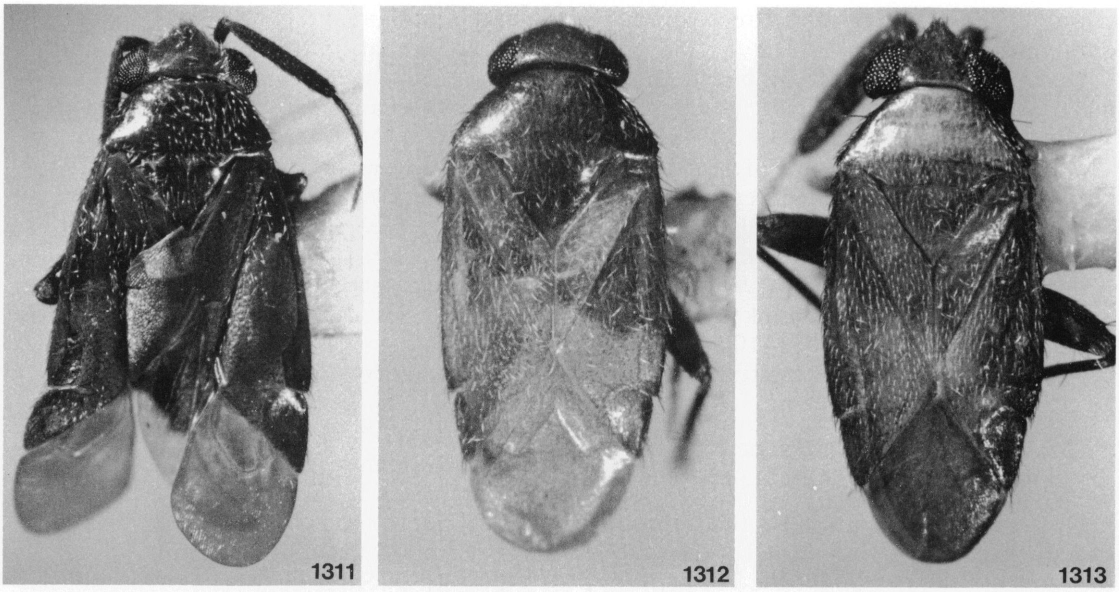
Figures 1285, 1311, and see 1325–1327

DIAGNOSIS: Recognized by the characters given in the key, especially the weakly woolly, sericeous pubescence on a deep maroon (castaneous) dorsum (fig. 1311), the first and second antennal segments only slightly darker than the dorsum, segment two distinctly swollen, and weakly terete. Most easily confused with *novocaledonicus,* which has very similar male genitalia (figs. 1325–1327), but distinguished by its larger size, much darker coloration (including maroon rather than dirty yellow tibiae and antennal segments three and four), and somewhat less strongly swollen second antennal segment.

DESCRIPTION: Macropterous male. Small, body broadly ovoid, length apex tylus-cuneal fracture 1.83, width pronotum 0.90; basic coloration deep maroon (castaneous), including legs and all antennal segments; membrane infumate.

Dorsum and venter clothed with weakly woolly, sericeous setae; antennal segments one and two covered with short, reclining, nearly black setae.

Body and head weakly flattened, tylus pro-



FIGS. 1311–1313. *Malaysiamiris* spp. 1311. *M. lacsensis,* holotype. 1312. *M. leyteanus,* holotype. 1313. *M. magnicornis,* holotype.

jecting and partially visible as viewed from above; head not concave behind, but contiguous with anterior margin of pronotum across entire posterior margin, including eyes; eyes large, but ventrally leaving genae relatively broadly exposed, weakly emarginate at point of antennal insertion; posterior margin of vertex very weakly sinuous and broadly rounded; antennal segment two swollen, distinctly terete, segments three and four very slender; lateral and posterior pronotal margins nearly straight; lateral corial margins weakly convex; cuneal incisure distinct.

MALE GENITALIA: Figures 1325–1327. Structure very close to that found in *novocaledonicus.*

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Plaine des Lacs, New Caledonia.

DISTRIBUTION: Figure 1285. New Caledonia.

HOLOTYPE ♂: NEW CALEDONIA: Plaine des Lacs, February 2, 1963, C. M. Yoshimoto collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype, but also J. L. Gressitt collector (AMNH, Bishop), 4♂♂.

Malaysiamiris leyteanus, new species

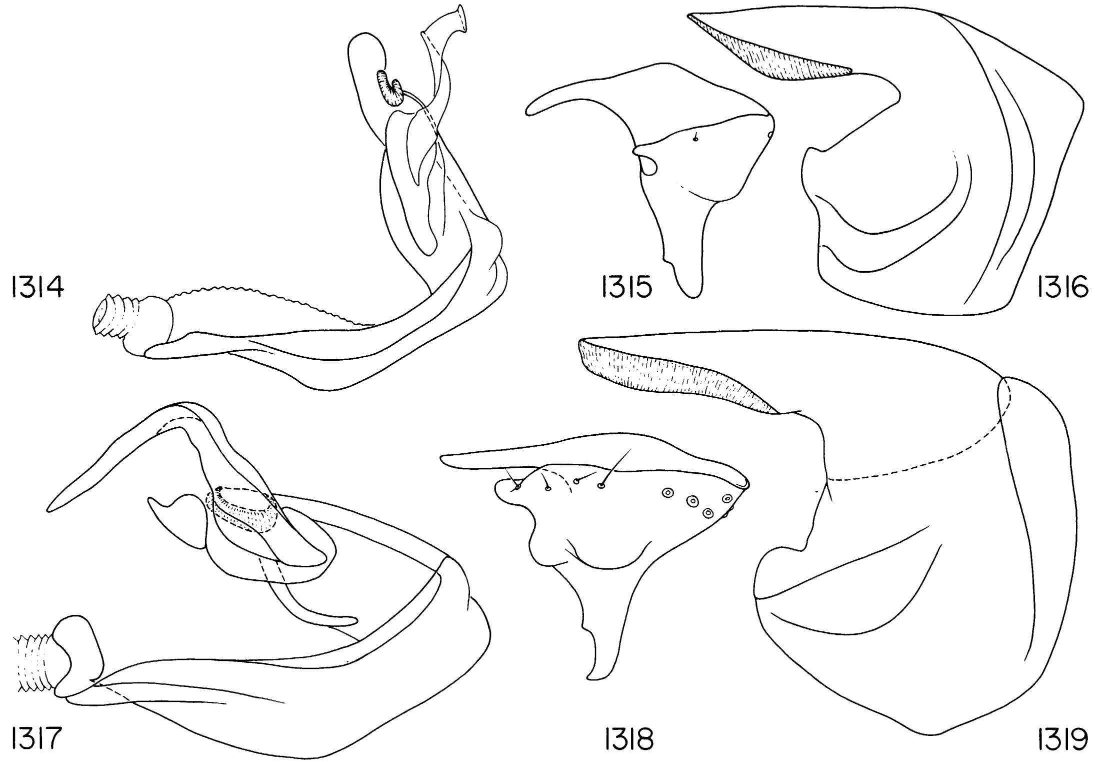
Figures 1284, 1312, 1314–1316

DIAGNOSIS: Recognized by the combination of characters given in the key, especially the coloration (fig. 1312) and the form of the male genitalia (figs. 1314–1316).

DESCRIPTION: Macropterous male. Very small, body elongate elliptical, at most appearing weakly flattened, length apex tylus-cuneal fracture 1.33, width pronotum 0.75; basic coloration medium brown, hemelytra generally lighter and nearly transparent except along lateral corial and cuneal margins, which are heavily pigmented; labium, prosternal xyphus, procoxae (and apparently meso- and meta-coxae), pro- and meso-femora, tibiae and tarsi nearly white; membrane weakly smoky.

Body generally covered with recumbent, pale, simple setae; antennal segments one and two covered with reclining pale setae and a few semierect more slender setae.

Head transverse, nearly vertical, tylus not visible from above, gula obsolete, ventral margin of eyes not quite attaining bucculae; eyes moderately emarginate at antennal insertion; posterior margin of vertex weakly



FIGS. 1314–1319. *Malaysiamiris* spp., male genitalia. 1314–1316. *M. leyteanus*. 1314. Vesica. 1315. Left paramere. 1316. Phallotheca. 1317–1319. *M. magnicornis*. 1317. Vesica. 1318. Left paramere. 1319. Phallotheca.

concave, evenly rounded; antennal segments one and two moderately enlarged, segment two weakly fusiform, segments three and four very slender and subequal in diameter; labium reaching to anterior margin of mesocoxae; pronotum weakly but evenly rounded, lateral margins evenly convexly rounded, posterior margin shallowly but distinctly concave across mesoscutum; scutellum weakly transversely rounded; lateral corial margins weakly convexly rounded; cuneal incisure distinct; lateral cuneal margin nearly straight; metafemora weakly enlarged.

MALE GENITALIA: Figures 1314–1316.

FEMALE: Unknown.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the Philippine Island of Leyte.

DISTRIBUTION: Figure 1284. Philippine Islands.

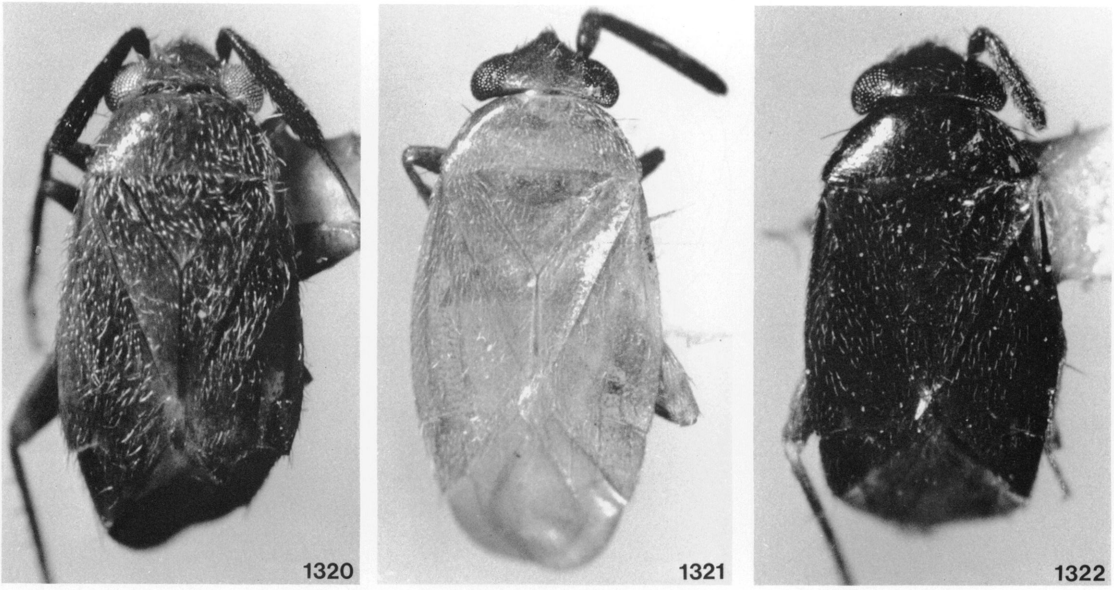
HOLOTYPE ♂: PHILIPPINE ISLANDS: Leyte, Dagami, 14 mi. SW of Tacloban, July 23, 1961, Philippine Islands National Museum and American Museum of Natural History Expedition; deposited in the American Museum of Natural History, New York.

Malaysiamiris magnicornis, new species

Figures 1284, 1313, 1317–1319

DIAGNOSIS: Recognized by the combination of characters given in the key, especially the flattened appearance, the tylus which is conspicuous as viewed from above, the very greatly enlarged second antennal segment, the maroon and tawny coloration (fig. 1313), and the form of the male genitalia (figs. 1317–1319).

DESCRIPTION: Macropterous male. Small, elongate elliptical, length apex tylus-cuneal fracture 1.78, width pronotum 0.80; maroon as follows: head generally (vertex somewhat



Figs. 1320–1322. *Malaysiamiris* spp. 1320. *M. novocaledonicus*, holotype. 1321. *M. submagnicornis*, holotype. 1322. *M. tawauanus*, holotype.

brownish), antennal segments one and two, pronotum laterally, corium laterally, cuneus, thorax laterally, meso- and meta-coxae, metafemora, and abdomen laterally (the scutellum also weakly maroon); yellow-white as follows: pronotum except laterally, clavus and endocorium, antennal segments three and four, labium, prosternal xyphus, procoxae, pro- and meso-femora and tibiae and all tarsi; metatibiae nearly black; membrane infumate.

Body generally covered with relatively short, pale, subappressed, simple setae; antennal segments one and two with numerous, dark-colored, reclining setae; segment two also with reclining, slender, pale setae.

Body and head noticeably flattened, head distinctly prognathus, tylus conspicuously projecting when viewed from above, eyes weakly substylate; vertex depressed mesially, posterior margin very weakly concave, evenly but rather sharply rounded, antennal segments one and two very strongly enlarged, segment two fusiform, antennal segments three and four very slender and subequal in diameter; eyes emarginate at point of antennal insertion, ventral margins not attaining bucculae, width of genae about equal to diameter of tibiae; length of gula approximately two-thirds length of buccal cavity; labium reaching to apex of procoxae; pronotum with nearly straight lateral margins, posterior margin weakly excavated across mesoscutum; scutellum weakly depressed posteromesially; lateral corial margins nearly straight on anterior two-thirds, weakly convex on posterior one-third; cuneal incisure shallow but distinct, lateral cuneal margins weakly rounded; metafemora weakly enlarged.

Male Genitalia: Figures 1317–1319.

Female: Unknown.

Measurements: See Appendix.

Etymology: Named for the greatly enlarged second antennal segment.

Distribution: Figure 1284. Northern Borneo.

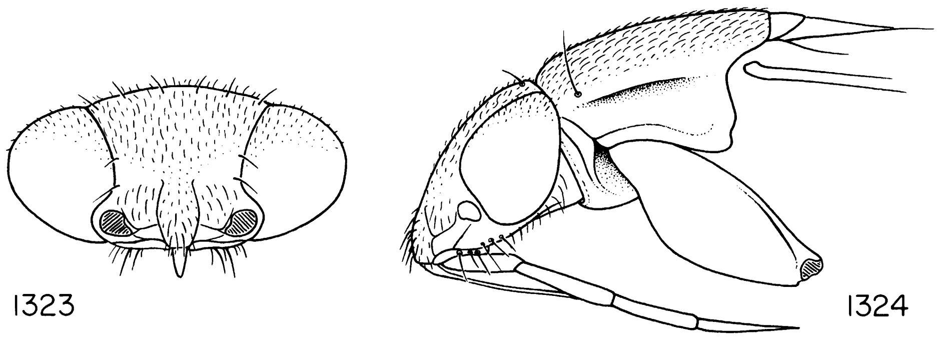
Holotype ♂: MALAYSIA: *Sarawak Prov.:* Kuching, Matang, 450–894 m., September 15, 1954, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

Malaysiamiris novocaledonicus,

new species

Figures 1285, 1320, 1325–1327

Diagnosis: Recognized by the characters given in the key, especially the weakly woolly



FIGS. 1323–1324. *Malaysiamiris submagnicornis,* ♂. 1323. Frontal view of head. 1324. Lateral view of head and prothorax.

sericeous pubescence on a dull maroon to dirty brown dorsum (fig. 1320), the contrasting deep maroon first and second antennal segments, the second segment swollen and terete, and by the form of the male genitalia (figs. 1325–1327). Most easily confused with *lacsensis* (see diagnosis for *lacsensis*).

DESCRIPTION: Macropterous male. Moderate-sized, ovoid, length apex tylus-cuneal fracture 1.60, width pronotum 0.79; basic coloration faded castaneous to light purple-brown; antennal segments one and two deep castaneous; antennal segments three and four and all tibiae and tarsi pale yellowish; membrane infumate, dark.

Dorsum and venter clothed with weakly woolly sericeous setae; antennal segments one and two covered with short, reclining, nearly black setae.

Body and head very weakly flattened, tylus projecting, at most barely visible as viewed from above; head not concave behind, but contiguous with anterior margin of pronotum across entire posterior margin, including eyes; eyes large, but ventrally leaving genae relatively broadly exposed, weakly emarginate at point of antennal insertion; posterior margin of vertex weakly sinuous and broadly rounded; antennal segment two swollen, terete, segments three and four very slender; lateral and posterior margins of pronotum nearly straight; lateral corial margins weakly convex; cuneal incisure distinct.

MALE GENITALIA: Figures 1325–1327.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix

ETYMOLOGY: Named for New Caledonia.

DISTRIBUTION: Figure 1285. New Caledonia.

HOLOTYPE ♂: NEW CALEDONIA: 10 km. NW of Plum, March 24, 1968, J. L. Gressitt and T. C. Maa collectors; deposited in the B. P. Bishop Museum, Honolulu.

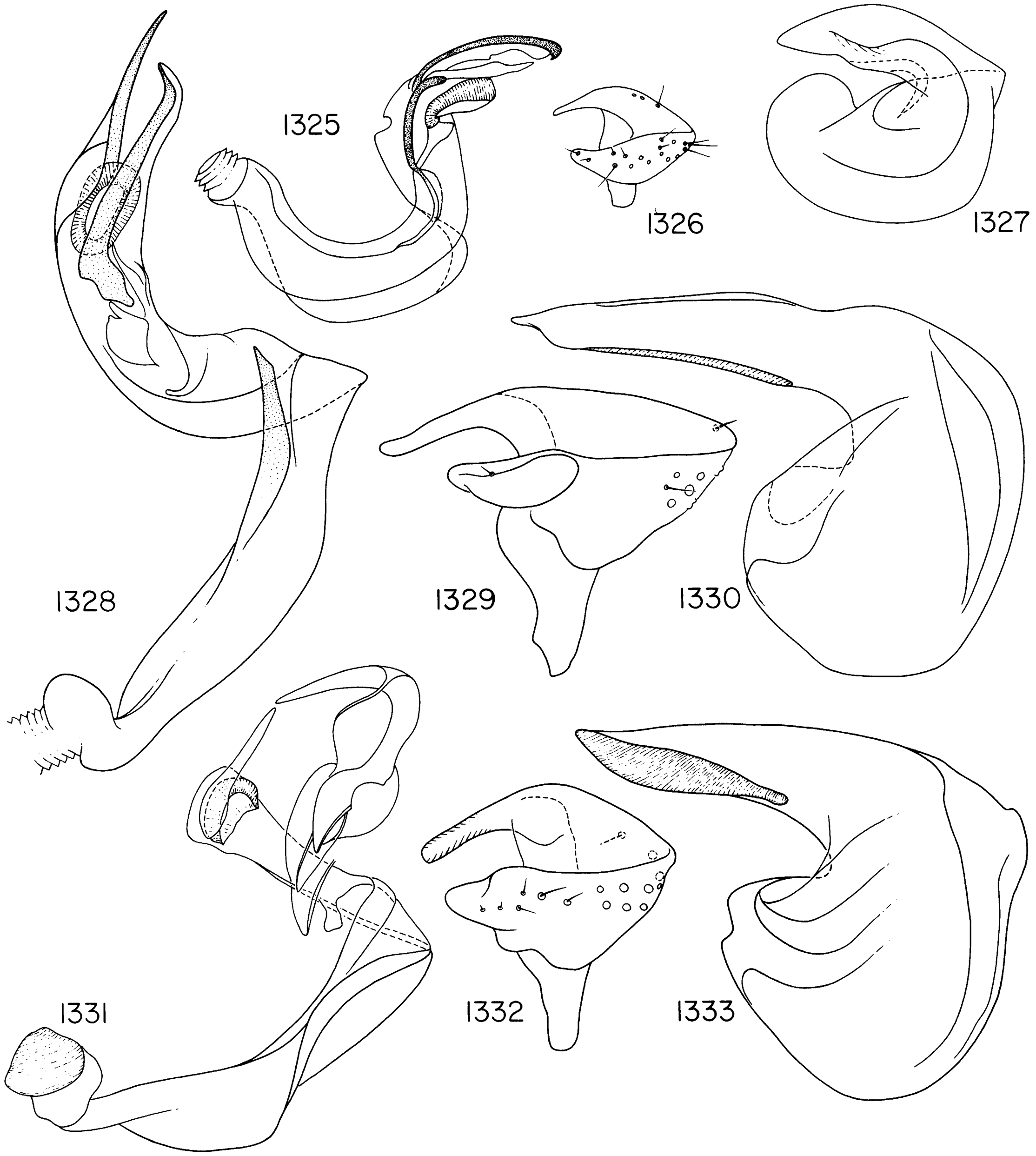
PARATYPE: Same data as holotype (AMNH, Bishop), 2♂♂, 2♀♀. NEW CALEDONIA: Mt. Dzumao, September 1940, 1 spec. ex *Tristania* flowers, others sweeping (Williams; AMNH, Bishop), 2♂♂, 4♀♀; Mt. Koghi, January 1962 (Krauss; Bishop), 1♂; Mt. Koghi, 500–800 m., October 23–27, 1967, dry scrub (Sedlacek; Bishop), 2♀♀; Mouriance Pass, February 10, 1962 (Krauss; Bishop), 2♂♂; Thio, March 1959 (Krauss; AMNH, Bishop), 1♂, 1♀.

Malaysiamiris submagnicornis,
new species

Figures 1284, 1321, 1323, 1324, 1328–1330

DIAGNOSIS: Recognized by the characters given in the key, particularly the flattened appearance (figs. 1321, 1324), the tylus which is conspicuous from above, the enlarged second antennal segment, the coloration, and the form of the male genitalia (figs. 1328–1330). In all of these characters except coloration *submagnicornis* is most similar to *magnicornis*.

DESCRIPTION: Macropterous male. Moderate-sized, ovoid, length apex tylus-cuneal fracture 1.83, width pronotum 0.95; basic coloration rather light red orange; head, antennal segments one and two and metatibiae



FIGS. 1325–1333. *Malaysiamiris* spp., male genitalia. 1325–1327. *M. novocaledonicus*. 1325. Vesica. 1326. Left paramere. 1327. Phallotheca. 1328–1330. *M. submagnicornis*. 1328. Vesica. 1329. Left paramere. 1330. Phallotheca. 1331–1333. *M. tawauanus*. 1331. Vesica. 1332. Left paramere. 1333. Phallotheca.

brownish black; prosternal xyphus and procoxae whitish; membrane orangish.

Body generally covered with rather short, pale, subappressed, simple setae; antennal segments one and two with short, stout, black, reclining setae, segment two also with some longer, fine, pale, semierect setae.

Body and head distinctly flattened, head prognathous, tylus strongly projecting in front of anterior margin of eyes; head weakly concave behind, posterior margin of vertex and eyes conforming to anterior margin of pronotum; posterior margin of vertex nearly straight, weakly carinate; ventral margins of eyes not attaining bucculae, width of genae slightly greater than tibial diameter; buccal cavity parallel-sided; gula approximately the length of buccal cavity; eyes distinctly emarginate at antennal insertion; antennal segments one and two strongly enlarged, subequal in diameter, segment two nearly cylindrical; antennal segments three and four missing in holotype; labium reaching to about anterior margin of mesocoxae; pronotum strongly flattened, weakly depressed transversely between anterior and posterior lobes, anterolateral angles evenly and rather strongly convexly rounded, becoming straight posteriorly, posterior margin of pronotum shallowly excavated and straight across mesoscutum; lateral corial margins rather strongly convexly rounded, widest at a point about two-thirds of distance from base of corium to cuneal fracture, cuneal fracture obsolete, lateral cuneal margins very weakly rounded; metafemur moderately enlarged.

Male Genitalia: Figures 1328–1330.

Female: Unknown.

Measurements: See Appendix.

Etymology: Named for the somewhat less strongly enlarged second antennal segment than in *magnicornis.*

Distribution: Figure 1284. Northern Borneo.

Holotype ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Tawau, Quoin Hill Cocoa Research Station, October 3, 1962, primary forest, Y. Hirashima collector; deposited in the B. P. Bishop Museum, Honolulu.

Malaysiamiris tawauanus, new species

Figures 1284, 1322, 1331–1333

Diagnosis: Recognized by the characters given in the key, especially the dark brown coloration (fig. 1322) and the form of the male genitalia (figs. 1331–1333). The superficial resemblance to *Paramixia singalensis* is remarkable.

Description: Macropterous male. Small. elongate, length apex tylus-cuneal fracture 1.41, width pronotum 0.76; basic coloration castaneous, extreme distal portion of pro- and meso-femora, pro- and meso-tibiae, extreme proximal portion of metatibiae, and all tarsi yellowish or yellow-white; membrane infumate.

Body generally covered with relatively short, fine, pale subappressed setae; antennal segments one and two with relatively stout, reclining, pale setae, segment two also with some longer, fine, semierect setae.

Head strongly declivent, tylus barely, if at all, visible from above; head distinctly concave behind, posterior margin of vertex nearly straight with a low carina on mesial two-thirds; first and second antennal segments moderately enlarged, subequal in diameter, second segment short and distinctly fusiform (antennal segments three and four missing in all known specimens); eyes very weakly emarginate at antennal insertion; ventral margins of eyes not attaining bucculae, width of genae about that of tibial diameter; buccal cavity parallel-sided; gula obsolete; labium reaching to anterior margin of mesocoxae; lateral pronotal margins convexly rounded, posterior margin shallowly excavated across mesoscutum; scutellum weakly convex; lateral corial margins weakly convexly rounded; cuneal incisure shallow, lateral cuneal margin distinctly rounded; metafemora moderately enlarged.

Male Genitalia: Figures 1331–1333.

Female: Unknown.

Measurements: See Appendix.

Etymology: Named for Tawau, Northern Borneo.

Distribution: Figure 1284. Northern Borneo.

Holotype ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Tawau, Quoin Hill Cocoa Research Station, September 26, 1962, light trap, Y. Hirashima collector; deposited in the B. P. Bishop Museum, Honolulu.

Paratypes: Same data as holotype, except September 4 (Bishop), 1♂, and October 1 (AMNH), 1♂.

MALAYSIAMIROIDES, NEW GENUS

Diagnosis: Most similar in general appearance to *Malaysiamiris*; may also be confused with *Decomioides* and smaller species of *Decomia,* or if claws and male genitalia

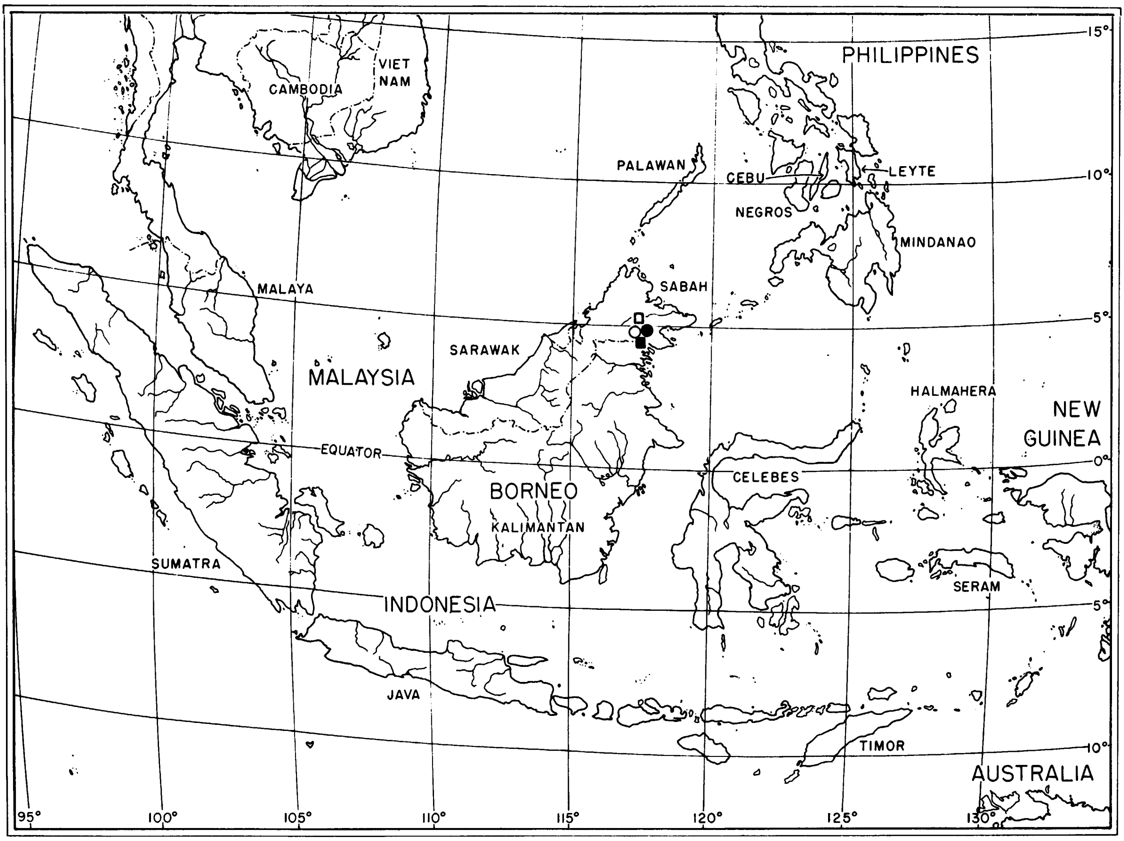
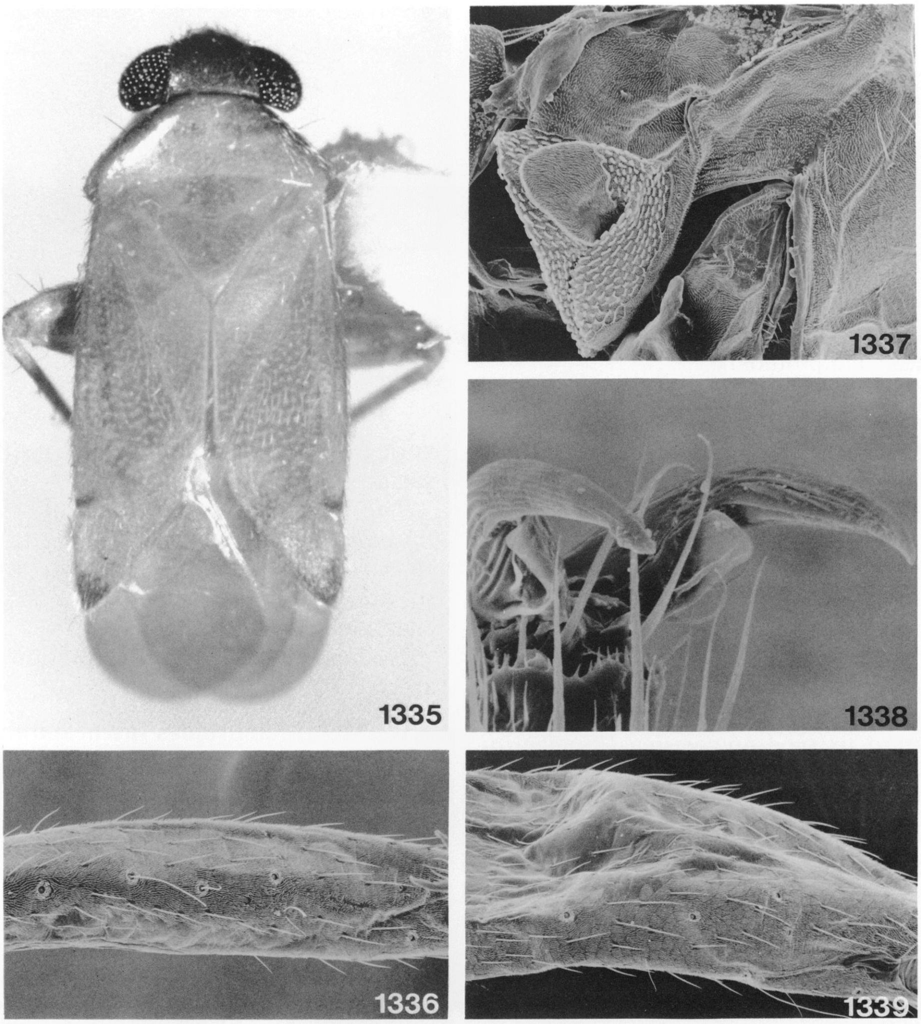

PHILIPPINES
VIET NAM
CAMBODIA
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
MALAYA
SABAH
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 1334. Distribution of *Malaysiamiroides* spp. *M. fuscocapitatus* (○); *M. hirashimai* (●); *M. kuncheriai* (□); *M. mirabilis* (■).

not examined, possibly with *Psallops* Usinger. Most readily recognized by the structure of the male genitalia, particularly the splayed-out left paramere and the greatly enlarged anterior process (e.g., figs. 1352, 1355), the long apical vesical spines (one or two) (e.g., figs. 1342, 1351), and the second antennal segment not enlarged (see also discussion under *Malaysiamiris, Decomia* and *Decomioides*).

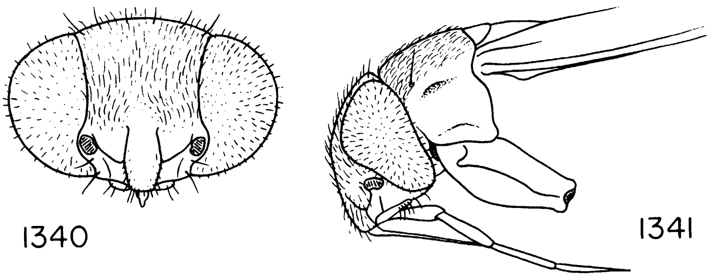
DESCRIPTION: Macropterous male. Very small, elongate, nearly parallel-sided, range length apex tylus 1.38–1.53, range width pronotum 0.73–0.78; dorsal surface smooth, weakly to moderately shining, clothed with a single type of moderately long, fine, pale subappressed pubescence; basic coloration either orange or reddish (head sometimes contrasting); all antennal segments with short reclining vestiture and scattered semierect setae somewhat longer than diameter of segment; pronotum with an erect long spine on anterolateral angles; all femora with a pair of moderately long semierect anteapical spines on dorsal surface and a pair of shorter reclining spines anteapically; meso- and metafemoral trichobothria as in figures 1336 and 1339; all tibiae with scattered semierect spines about as long as tibial diameter, tibiae on distal one-third with more numerous, shorter, reclining spines; all tibiae with several rows of minute spicules.

Head transverse, concave behind, just obscuring anterolateral angles of pronotum; more or less quadrate in frontal view, tylus barely visible from above; posterior margin of vertex nearly straight, evenly rounded (figs. 1335, 1348–1350); eyes occupying entire sides of head, nearly reaching to bucculae, genae obsolete (fig. 1341); antennae inserted almost



FIGS. 1335–1339. *Malaysiamiroides fuscocapitatus.* 1335. Dorsal view, holotype. 1336. Mesofemur, showing trichobothria. 1337. Lateral view of metathorax, showing scent-gland evaporatory area. 1338. Pretarsus. 1339. Metafemur, showing trichobothria.

on ventral surface of head, anterior margin of eyes strongly emarginate at point of antennal insertion (fig. 1340); buccal cavity short, rounded, gula obsolete; labium reaching to about base of metacoxae; antennal segment one short, pedunculate, segment two very weakly enlarged, tapering to somewhat greater diameter distally, segments three and four very slender, subequal in diameter; pronotum transverse, calli not defined, lateral margins weakly convexly rounded, posterior margin nearly straight, not excavated mesially; mesoscutum exposed, separated from scutellum by a fine sinuous impression; scutellum flat, corium laterally nearly straight to weakly convexly rounded, cuneus elongate, cuneal fracture weakly angled anteromesially, cuneal incisure pronounced (fig. 1335); metathoracic scent-gland evaporatory area as in figure 1337; pro- and meso-femora elongate rectangular, metafemora weakly to moderately strongly enlarged; claws strongly bent subbasally, pulvilli small, parempodia setiform (fig. 1338).



FIGS. 1340, 1341. *Malaysiamiroides fuscocapitatus*, ♂. 1340. Frontal view of head. 1341. Lateral view of head and prothorax.

MALE GENITALIA: Vesica of known species of two types: 1) the basal section elongate, tubular, curved, terminating in a well-developed elliptical secondary gonopore and a very long slender spine (*fuscocapitatus* and *hirashimai*; figs. 1342, 1345), and 2) basal section enlarged, two "straps" diverging and contorted distally, gonopore shape variable, two terminal spiculi, one of variable shape, the other long and slender, similar to spiculum found in type-one vesica (*kuncheriai* and *mirabilis*; figs. 1351, 1354); phallotheca of type-one vesica with strong right angle bend and rather elongate distal section, opening large (figs. 1344, 1347); phallotheca of type-two vesica more or less rectilinear, not so strongly right-angled as in type one, and also with a large opening (figs. 1353, 1357); right paramere splayed out in all known species, form somewhat similar to *Decomia, Pseudosthenarus,* and some Pilophorini; anterior process of left paramere strongly developed (figs. 1346, 1355); right paramere either lanceolate or rectangular, sometimes greatly enlarged compared to most Phylinae (fig. 1356).

FEMALE: Not positively identified.

TYPE SPECIES: *Malaysiamiroides fuscocapitatus,* new species.

ETYMOLOGY: Named for the similarity of its appearance to *Malaysiamiris*; masculine.

DISTRIBUTION: Figure 1334. Northern Borneo.

DISCUSSION: As noted in the diagnosis, *Malaysiamiroides* species are very similar to some *Malaysiamiris.* Positive discrimination is dependent upon examination of the male genitalia. I have not been able to find any characters which will allow for positive generic identification of the females without association with males.

The four described species of *Malaysiamiroides* are included in the key to *Malaysiamiris* species because the two groups are so difficult to distinguish on non-genitalic characters.

No host or ecological information is available.

Malaysiamiroides fuscocapitatus,
new species
Figures 1334–1344

DIAGNOSIS: Recognized by the characters given in the key and particularly by the form of the male genitalia (figs. 1342–1344).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.44, width pronotum 0.73; basic coloration yellow-orange with the following exceptions: head, pronotum anterolaterally, and abdomen laterally and on genital capsule, brown; costal margin of corium, narrow band at apex of corium, posterior one-third of cuneus and metafemora irregularly red; membrane pale, translucent.

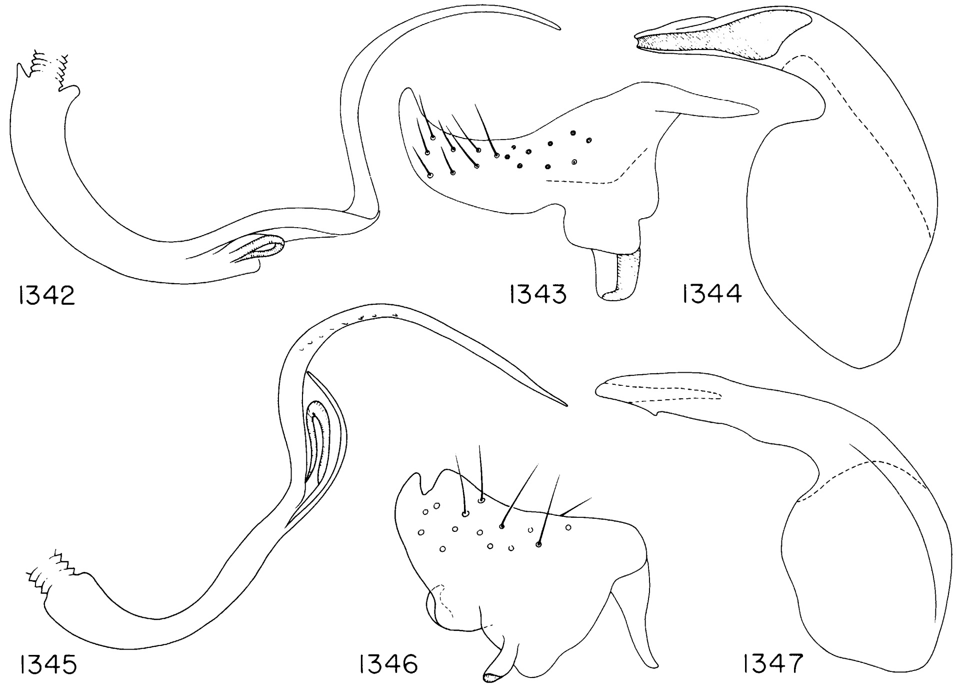
Basic structure, surface texture, and vestiture as in generic description; meso- and meta-femoral trichobothria as in figures 1336 and 1339; metathoracic scent-gland evaporatory area as in figure 1337; pretarsus as in figure 1338.

MALE GENITALIA: Figures 1342–1344.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the dark coloration of the head in contrast to the rest of the body.

DISTRIBUTION: Figure 1334. Northern Borneo.



FIGS. 1342–1347. *Malaysiamiroides* spp. 1342–1344. *M. fuscocapitatus*. 1342. Vesica. 1343. Left paramere. 1344. Phallotheca. 1345–1347. *M. hirashimai*. 1345. Vesica. 1346. Left paramere. 1347. Phallotheca.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Forest Camp, 19 km. N of Kalabakan, October 7–10, 1962, malaise trap, Y. Hirashima collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH), 1♂. MALAYSIA: *Sabah Prov.:* Tawau Residency, Tawau, Quoin Hill Cocoa Research Station, September 1, 1962, light trap (Hirashima; Bishop), 1♂.

Malaysiamiroides hirashimai,
new species
Figures 1334, 1345–1348

DIAGNOSIS: Recognized by the characters given in the key and particularly the form of the male genitalia (figs. 1345–1347); the vesica similar in form to that of *fuscocapitatus*.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.38, width pronotum 0.73; basic coloration yellow-orange with a slight brownish suffusion, with the following areas reddish: extreme apex of corium at cuneal fracture, posterior one-fourth of cuneus, thoracic pleuron, and abdomen and femora irregularly, and metafemora in a banded pattern; antennal segments two, three, and four missing in holotype.

Basic structure, surface texture, and vestiture as in generic description.

MALE GENITALIA: Figures 1345–1347.

MEASUREMENTS: See Appendix.

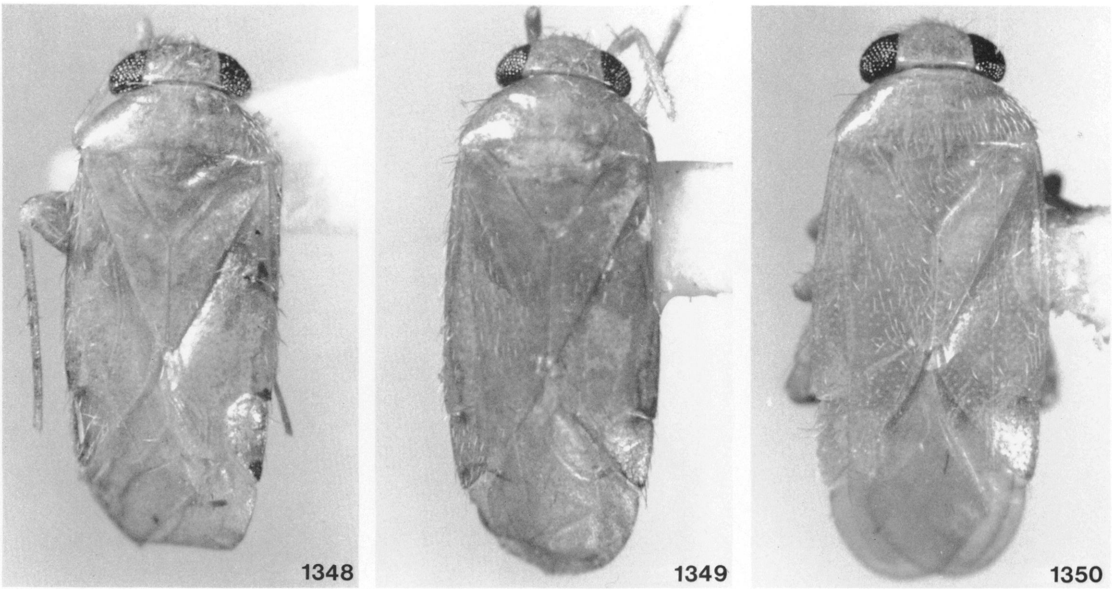
ETYMOLOGY: Named for Y. Hirashima.

DISTRIBUTION: Figure 1334. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Forest Camp, 19 km. N of Kalabakan, October 10, 1962, Y. Hirashima collector; deposited in the B. P. Bishop Museum, Honolulu.

Malaysiamiroides kuncheriai,
new species
Figures 1334, 1349, 1351–1353

DIAGNOSIS: Recognized by the characters given in the key particularly the form of the male genitalia (figs. 1351–1353).



FIGS. 1348–1350. *Malaysiamiroides* spp. 1348. *M. hirashimai,* holotype. 1349. *M. kuncheriai,* holotype. 1350. *M. mirabilis,* holotype.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.50, width pronotum 0.75; basic coloration red-orange (including veins of membrane proximal to cuneus) with the following exceptions; antennal segments one and two and protibiae and tarsi yellowish (profemora probably red-orange); remaining antennal segments, femora, tibiae, and tarsi missing from holotype); membrane orangish.

Basic structure, surface texture, and vestiture as in generic description.

MALE GENITALIA: Figures 1351–1353.

ETYMOLOGY: Named for K. J. Kuncheria.

DISTRIBUTION: Figure 1334. Northern Borneo

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Forest Camp, 19 km. N of Kalabakan, October 10, 1962, K. J. Kuncheria collector; deposited in B. P. Bishop Museum, Honolulu.

Malaysiamiroides mirabilis, new species

Figures 1334, 1350, 1354–1357

DIAGNOSIS: Recognized by the characters given in the key especially the form of the male genitalia with the extremely large right paramere (figs. 1354–1357).

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.43, width pronotum 0.78; basic coloration yellow-orange including appendages, with membrane somewhat lighter; parameres of male genitalia contrasting dark brown; membrane yellowish.

Basic structure, surface texture, and vestiture as in generic description.

MALE GENITALIA: Figures 1354–1357.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the remarkable structure of the male genitalia, particularly the size of the right paramere, which is unusual in the Phylinae.

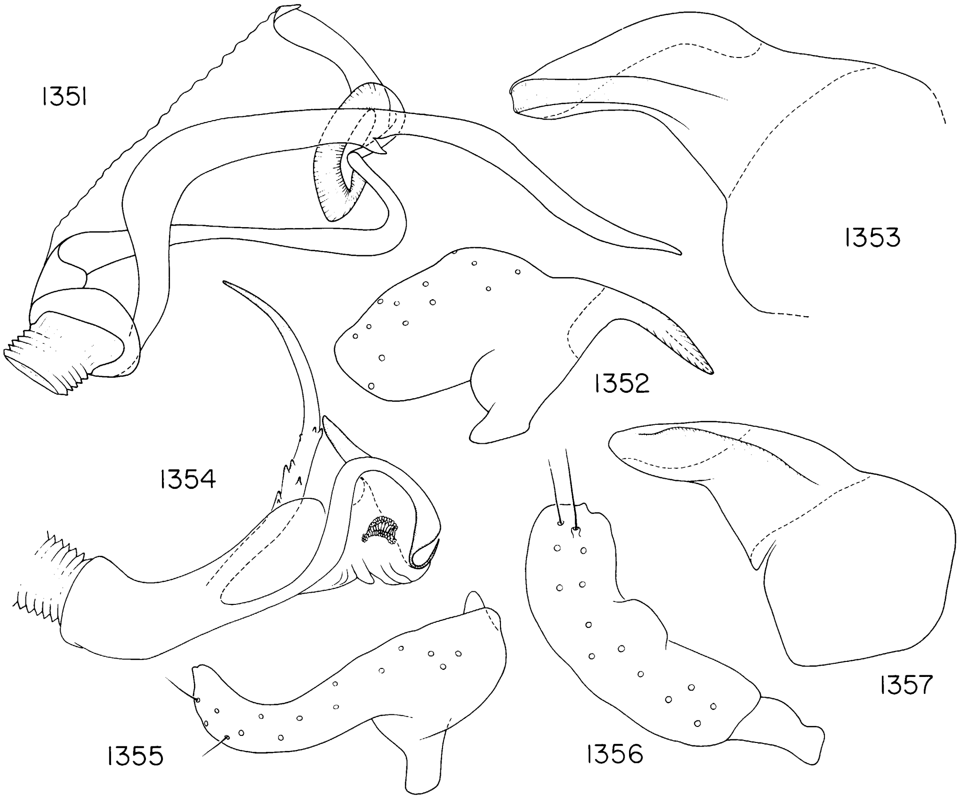
DISTRIBUTION: Figure 1334. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* Tawau Residency, Forest Camp, 19 km. N of Kalabakan, 60 m., October 28, 1962, K. J. Kuncheria collector; deposited in the B. P. Bishop Museum, Honolulu.

OPUNA KIRKALDY

Opuna Kirkaldy, 1902, p. 140.
Sampsigeranus Distant, 1910a, p. 17. NEW SYNONYMY.

DIAGNOSIS: Recognized by the weakly fleshy, flattened, apically convergent par-



FIGS. 1351–1357. *Malaysiamiroides* spp. 1351–1353. *M. kuncheriai*. 1351. Vesica (obverse view). 1352. Left paramere (frontal view). 1353. Phallotheca. 1354–1357. *M. mirabilis*. 1354. Vesica. 1355. Left paramere. 1356. Right paramere. 1357. Phallotheca.

empodia (figs. 1364, 1365), the vesica of the male in the form of a simple curve or weakly sigmoid and with a single apical spine and without notches subtending the secondary gonopore (figs. 1371, 1374, etc.), and the head not concave behind and not obscuring the anterior margin of the pronotum; hemelytra often hyaline; moderate sexual dimorphism in eyes and antennal segment two.

DISTRIBUTION: Figures 1358 and 1359. Sri Lanka east to Samoa and Tonga and north to Hawaii.

DISCUSSION: The six species here placed in *Opuna* are grouped together on the basis of genital structure and to some extent on general appearance. There are no characters which suggest that this grouping is necessarily monophyletic as all occur in at least some other groups of phyline Miridae.

There is considerable variation between some of the species, e.g., *annulatus* (Knight) has hyaline hemelytra, whereas *pilosulus* (Distant) does not. The new species *luzonica, maai,* and *ryandi* do appear to form a monophyletic group on the basis of the structure of the left paramere (figs. 1376, 1386, 1393). *Opuna* is apparently the oldest available name for any included described species; it has date priority over *Sampsigeranus* Distant. I have chosen this grouping for convenience until we have an improved knowledge of the morphology and classification of this assemblage of phylines.

Opuna was synonymized by Zimmerman (1948) with *Campylomma* (see discussion under *O. sharpianus*) and *Sampsigeranus* with *Campylomma* by Carvalho (1952). Our currently more detailed knowledge of the male genitalia does not suggest any necessary relationship between *Campylomma* and the species placed in each of these genera.

NOTES ON ADDITIONAL SPECIMENS: Five

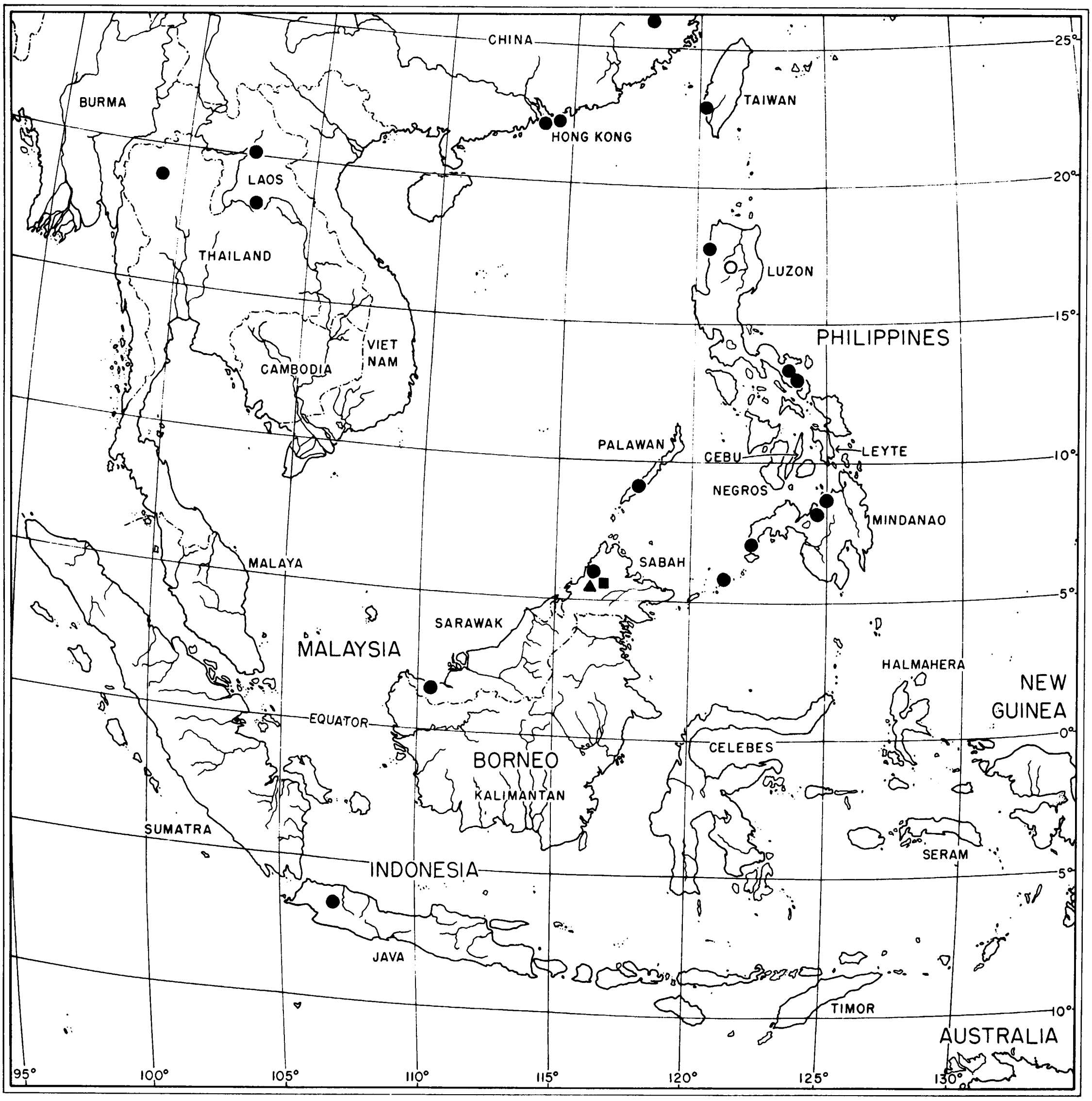

CHINA
25°
BURMA
HONG KONG
TAIWAN
20°
LAOS
THAILAND
LUZON
15°
PHILIPPINES
VIET
NAM
CAMBODIA
PALAWAN
CEBU
LEYTE
10°
NEGROS
MINDANAO
MALAYA
SABAH
5°
SARAWAK
MALAYSIA
HALMAHERA
NEW
GUINEA
EQUATOR
0°
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
5°
JAVA
TIMOR
10°
AUSTRALIA
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 1358. Distribution of *Opuna* spp. *O. annulatus* (●) (in part); *O. luzonica* (○); *O. maai* (▲); *O. ryandi* (■).

male specimens, possibly representing five species are available from Indonesia (Sumatra) and Malaysia (Malaya, Sabah) (AMNH, BMNH, Bishop). All have genitalia resembling the group of species containing *luzonica.*

Seven male specimens from Viet Nam (AMNH, Bishop) apparently representing a single species have characters which do not allow for their placement in any genus presently available, although they resemble some *Opuna* species. They have a head which is not concave behind and does not obscure the anterior margin of the pronotum, the hemelytra are subhyaline with recumbent simple setae and without markings, and the claws are curved, with small flaplike pulvilli; the parempodia are setiform, unlike the species which I have placed in *Opuna.* The vesica in the males is strongly sigmoid and forms a

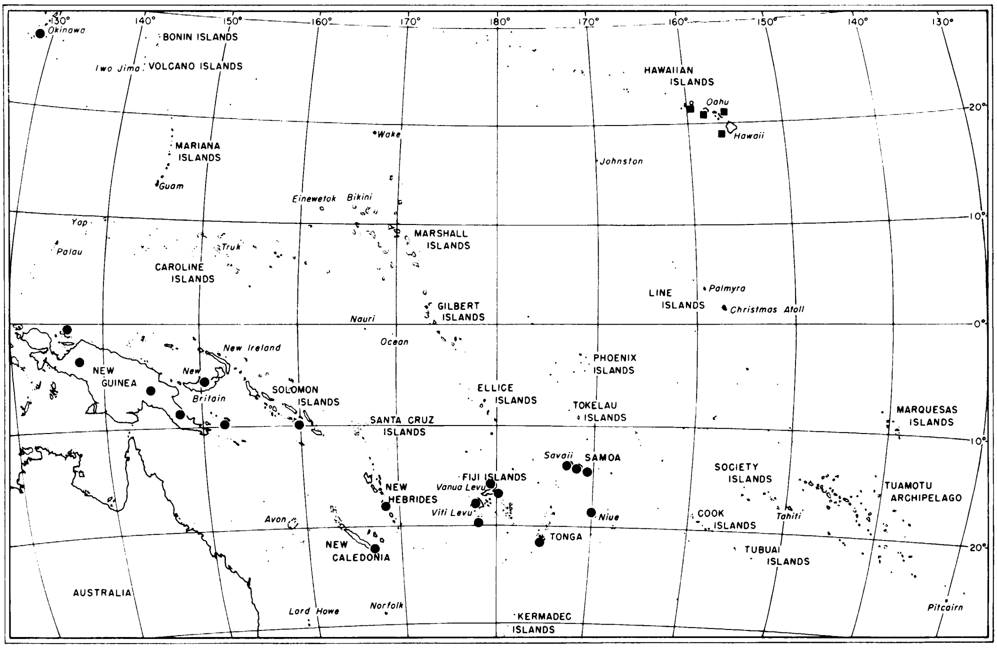

130°
140°
150°
160°
170°
180°
170°
160°
150°
140°
130°
Okinawa
BONIN ISLANDS
Iwo Jima
VOLCANO ISLANDS
HAWAIIAN ISLANDS
Oahu
Hawaii
20°
MARIANA ISLANDS
Guam
Wake
Johnston
Eniwetok
Bikini
Yap
Palau
Truk
MARSHALL ISLANDS
10°
CAROLINE ISLANDS
LINE ISLANDS
Palmyra
Christmas Atoll
GILBERT ISLANDS
Nauri
0°
Ocean
New Ireland
NEW GUINEA
New Britain
SOLOMON ISLANDS
PHOENIX ISLANDS
ELLICE ISLANDS
TOKELAU ISLANDS
MARQUESAS ISLANDS
SANTA CRUZ ISLANDS
10°
Savaii
SAMOA
SOCIETY ISLANDS
FIJI ISLANDS
NEW HEBRIDES
Vanua Levu
Viti Levu
TUAMOTU ARCHIPELAGO
Niue
COOK ISLANDS
Tahiti
Avon
NEW CALEDONIA
TONGA
TUBUAI ISLANDS
20°
AUSTRALIA
Lord Howe
Norfolk
KERMADEC ISLANDS
Pitcairn

FIG. 1359. Distribution of *Opuna* spp. (continued). *O. annulatus* (●) (in part); *O. sharpianus* (■).

nearly complete coil and has a long attenuated spine. The distance from the apex of the tylus to the cuneal fracture is about 1.80.

Opuna annulatus (Knight), new combination

Figures 1358–1364, 1367–1373

Campylomma annulatus Knight, 1935, p. 197.

DIAGNOSIS: Recognized by the light green coloration (yellowish in some older specimens), the hyaline hemelytra, the three contrasting black bands on an otherwise light colored antennal segment two, the head very weakly exserted (not concave behind) (fig. 1360), the femora and especially tibiae with contrasting black spots, and the form of the male genitalia, the vesica sigmoid in shape with a single attenuated apical spine and the left paramere compact, the posterior process being slightly elevated (figs. 1371–1373). Metathoracic scent-gland evaporatory area as in figure 1361; meso- and meta-femoral trichobothria as in figures 1362 and 1363; pretarsus as in figure 1364. There is some sexual dimorphism, antennal segment two being of slightly greater diameter in the males than the females and the eyes being larger in the males than in the females, the width of the vertex also proportionately narrower in the males.

MALE GENITALIA: Figures 1371–1373.

FEMALE: Macropterous. Similar to male.

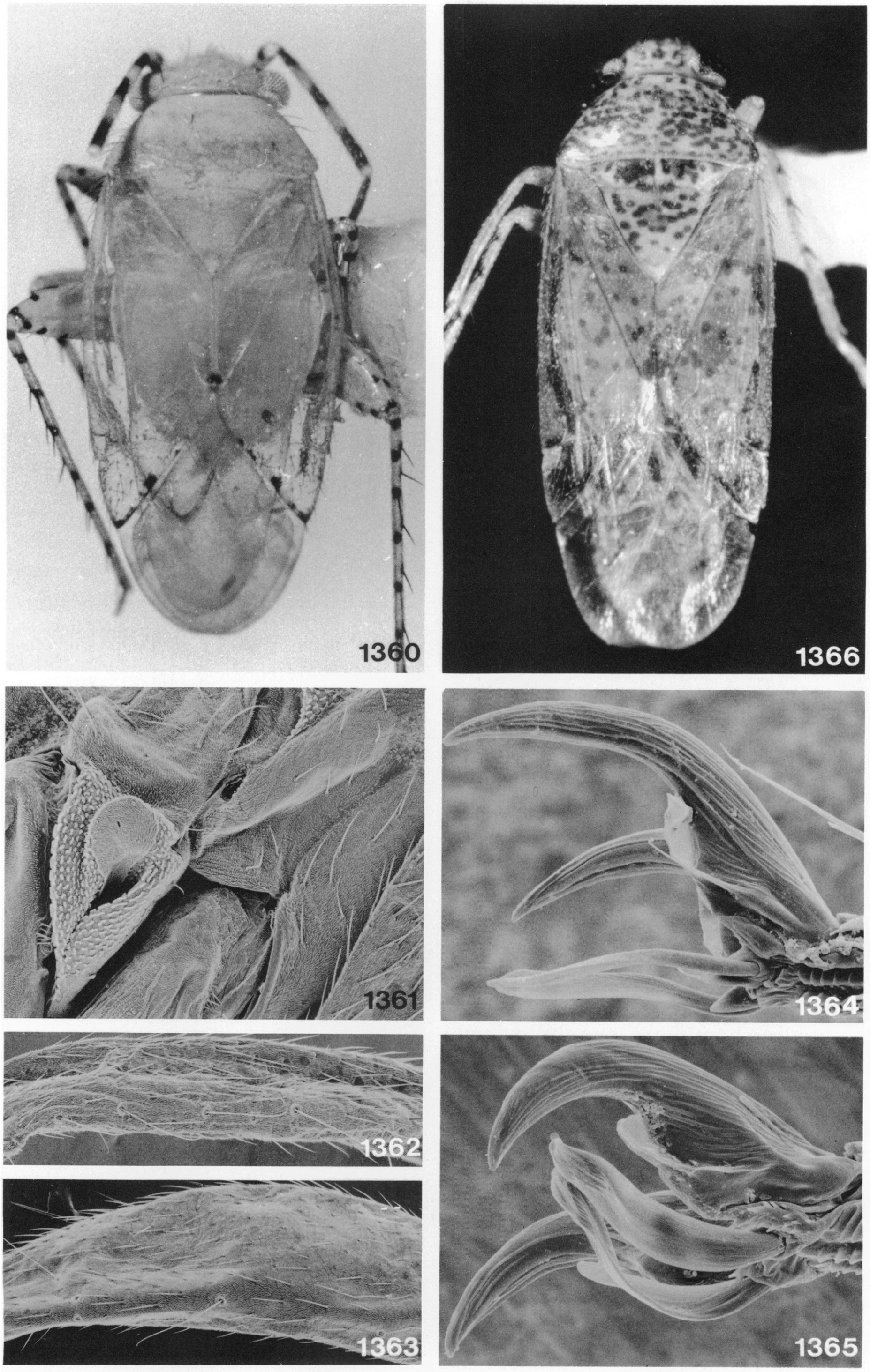
FEMALE GENITALIA: Posterior wall simple.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figures 1358 and 1359. Sri Lanka east to Tonga and Samoa, north to Okinawa and south to New Guinea and New Caledonia.

SPECIMENS EXAMINED: CHINA: *Fukien:* Chung An, Bohea Hill, November 10, 1939, January 10, 1960 (Maa; Bishop), 2♀♀.

FIJI: Kandavu, Wai Salima, April 30, 1941 (Krauss; Bishop), 1♀. *Taveuni:* Waiyevo, 0–100 m., January 1972 (Krauss; Bishop), 1♂, 1♀; Mbouma, 0–50 m., January 25, 1972 (Krauss; Bishop), 1♀. *Vanua Levu:* Nakawanga, October 9, 1955 (Gressitt; Bishop), 1♂. *Viti Levu:* Korolevu, 0–100 m., March 1973 (Krauss; Bishop), 1♂; 40 km. E of Nandi, July 26, 1967 (J. and M. Sedlacek; Bishop), 1♂, 1♀; Nandi airstrip, December 6, 1958 (Joyce; Bishop), 2♂♂, 1♀; Nandi, July 30, 1967 (Sedlacek; Bishop), 1♀; Nansori, May 1951



FIGS. 1360–1366. *Opuna* spp. 1360–1364. *O. annulatus.* 1360. Dorsal view. 1361. Lateral view of metathorax, showing scent-gland evaporatory area. 1362. Mesofemur, showing trichobothria. 1363. Metafemur, showing trichobothria. 1364. Pretarsus. 1365. *O. sharpianus,* pretarsus. 1366. *O. luzonica,* dorsal view, paratype from type locality.

(Krauss; Bishop), 1♀; Naguali, November 1957 (Krauss; Bishop), 1♂; Rewa, 1906 (Muir; Bishop), 1♀; Nansori Highlands, 500–700 m., September 9, 1976 (Krauss; AMNH), 1♂; Suva, November 1957 (Krauss; Bishop), 1♂; Tavua, March 7, 1963 (Yoshimoto; AMNH, Bishop), 5♂♂, 1♀.

HONG KONG: Castle Peak, August 3–5, 1964 (Ming and Ming; Bishop), 1♀; Hong Kong Island, Pokfulan, 150 m., May 29–30, 1964, light trap (Gressitt; Bishop), 1♂; Lantau Island, Trappist Monastery to Silver Mine Bay (over hills), July 24, 1964 (Voss; Bishop), 1♂, 2♀♀; Taipokau Forestry Station, July 15–17, 1964, light trap (Ming and Ming; Bishop), 2♂♂; Sai Kung Station, February 22, 1965, light trap (Ming and Voss; Bishop), 1♂.

INDONESIA: *Java:* Tjibodas, October 6, 1965 (Stusak; Bishop), 1♂. *West Irian:* Biak Island, Kampong Landbouw, 30 km. NE of airstrip, July 16, 1957 (Hardy; Bishop), 1♂; Wamena, 1700 m., February 10–25, 1960 (Maa; Bishop), 1♂.

JAPAN: *Okinawa:* Iwa, July–September 1945 (Parsons and Werner; Bishop), 2♂♂; (no locality), July–August 1945 (Field; USNM), 2♀♀.

LAOS: Muong Sing NW of Luang Prabang, 650 m., June 6–10, 1960, light trap (Quate; Bishop), 2♂♂; Sedone Prov., Pakse, May 23, 1965 (Ashlock; Bishop), 3♂♂; Vientiane, May 8–27, 1965, May–June, 1965, at light (Ashlock, Quate; Bishop), 1♂.

MALAYSIA: *Malaya:* Selangor, Kuala Lumpur, May 10, 1931, at light (BMNH), 1♀. *Sabah:* West Coast Residency, Tenompok, February 10–19, 1959 (Maa; Bishop), 8♂♂, 7♀♀. *Sarawak:* Bau District, Lake Area, August 30, 1958 (Maa; Bishop), 1♀.

NEW CALEDONIA: Anse Vata, November 1, 1958 (Joyce; Bishop), 2♂♂; Bourail, February 5, 1963 (Yoshimoto, Krauss, and Gressitt; AMNH, Bishop), 1♂, 3♀♀; above Plum, December 29, 1958 (Joyce; Bishop), 1♂.

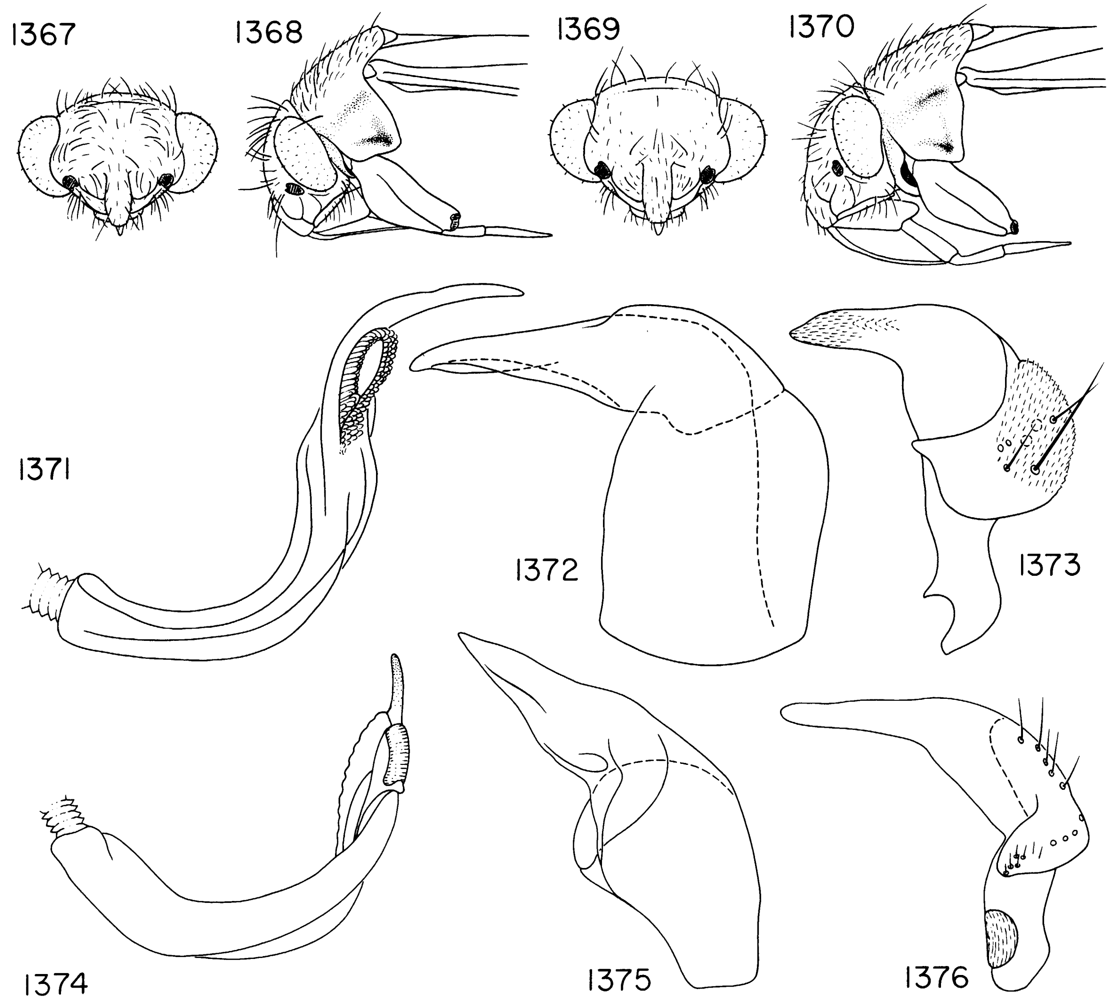
NEW HEBRIDES: Efate, Vila, August 1950 (Krauss; Bishop), 14♂♂, 28♀♀.

NIUE ISLAND: Alofi, September 14, 1975, at light (Kuschel; DSIR), 1♀.

PAPUA NEW GUINEA: *Milne Bay Prov.:* Woodlark Island, Kulumadau Hill, April 27–30, 1957 (Brandt; Bishop), 1♂. *Morobe Prov.:* Bubua near Lae, 10 m., August 31, 1957 (Hardy; Bishop), 1♂. *Northern Prov.:* Kokoda, 400 m., November 15–20, 1965, light trap (Sedlacek; Bishop), 1♀. *West New Britain Prov.:* South of Cape Hoskins Aerodrome, July 6, 1962 (Noona Dan; Copenhagen), 3♂♂. *New Ireland Prov.:* Patlangat Plantation, 03°09′S, 151°35′E, June 28, 1979, sea level (J. D. Smith; LACM), 1♂, 1♀. *Western Highlands Prov.:* 16 km. NW of Banz, 1700 m., April 19, 1963 (Sedlacek; Bishop), 1♀. [*Prov. unknown*]: Daradee near Javarere, Musgrove River, September 4, 1959 (Maa; Bishop), 2♀♀.

PHILIPPINE ISLANDS: *Luzon:* Albay Prov., Libon, Caguscos, 200 m., May 11, 1965 (Torrevillas; Bishop), 1♀; Cabugao, Laguna, April 3, 1968, border of rice field (Hardy; Bishop), 1♂, 1♀; Isabela Prov., San Mariano, May 15–20, 1961 (AMNH), 1♂; Camarines Sur Prov., Mt. Iriga, 100 m., March 23, 1962 (Torrevillas; Bishop), 1♂. *Mindanao:* Misamis Oriental Prov.: Minubanan, 1050–1200 m., April 5–9, 1961, at light (Torrevillas; Bishop), 1♂; Mt. Empagatao, 1100 m., April 21, 1961, light trap (Torrevillas; Bishop), 1♀; Mt. Pomalihi, 21 km. W of Gingoog City, 800–1000 m., October 11, 1965 (Torrevillas; Bishop), 2♂♂; Zamboanga del Sur, Zamboanga, July 30, 1958, light trap (Milliron; Bishop), 2♂♂, 1♀. *Sulu:* Jolo I., Jolo, August 31, 1958, light trap (Milliron; Bishop), 1♀. *Palawan:* Brookes Point, Uring Uring, August 23, 1961 (Noona Dan; Copenhagen), 1♂, 1♀.

AMERICAN SAMOA: *Tutuila:* Fagatogo, November 4, 1963, January 7, 1964 (Spencer; Bishop), 2♂♂; Mapusaga, December 17, 1956 (Kellen; Bishop), 1♂; Naval Station, September 11, 1940, at light (Swezey and Zimmerman; Bishop), 1♂; Pago Pago, October 20, 1956, March 1972 (Kellen, Krauss; Bishop), 4♂♂, 3♀♀; Tapuna, August 5–14, 1964 (Spencer; AMNH, Bishop), 8♂♂, 5♀♀; Taputimu, June 24–July 6, 1964 (Spencer; Bishop), 6♂♂, 7♀♀. WESTERN SAMOA: *Savaii:* Mataatu, October 16–18, 1936 (Olson; AMNH), 1♀. *Upuloa:* Apia, December 14, 1940, February 1960, March 1971 (1 specimen ex *Crotalaria*) (Krauss, Zimmerman; Bishop), 3♂♂, 1♀; Lefanga, February 1955 (Krauss; Bishop), 1♂, 1♀; Mt. Vaea, 183–427 m., September 1969 (Krauss; Bishop), 1♂; Tapatapao, 1000 feet, July 16–24, 1940, at light, sweeping, and ex pumpkin (Swezey and Zimmerman; AMNH, Bishop), 9♂♂, 7♀♀.



FIGS. 1367–1376. *Opuna* spp. 1367–1373. *O. annulatus*. 1367. Frontal view of head, ♂. 1368. Lateral view of head and prothorax, ♂. 1369. Frontal view of head, ♀. 1370. Lateral view of head and prothorax, ♀. 1371. Vesica. 1372. Phallotheca. 1373. Left paramere. 1374–1376. *O. luzonica*. 1374. Vesica. 1375. Phallotheca. 1376. Left paramere.

SOLOMON ISLANDS: *Guadalcanal:* Honiara, September 18–19, 1953, MV light (Bradley; BMNH), 1♂; Kukum, 10 m., June 20, 1956, light trap (Gressitt; Bishop), 1♀.

SRI LANKA: *Sabarangamuwa Prov.:* Kitulgala, 21 mi. N of Ratnapura, March 17, 1962, at light (Brinck, Andersson, and Cederholm; Lund), 5♂♂, 3♀♀. *Western Prov.:* Labugama, 24 mi. ESE Colombo, January 21, 1962 (Brinck, Andersson, and Cederholm; Lund), 1♂.

TAIWAN: Kwanzeling, Tainan Hsien, 250 m., April 6–7, 1965 (Yoshimoto; Bishop), 2♂♂.

THAILAND: *Chiangmai Prov.:* Chiangmai, June 17, 1965 (Ashlock; Bishop), 1♂, 1♀; Chiangmai, April–May 1952 (Thurman; USNM), 1♀; Pak Chong, December 1–3, 1957 (Maa; Bishop), 1♀.

TONGA ISLANDS: *Tongatapu:* Nukualofa, 0–50 m., February 1972 (Krauss; Bishop), 1♀.

DISCUSSION: Described from Samoa by Knight (1935) as a *Campylomma* species, *annulatus* seems to be unrelated to that group and now is known to have a much wider distribution. *Opuna annulatus* superficially resembles taxa such as *Pseudatomoscelis se-*

riatus (Reuter), but it is unclear whether an actual relationship exists, since little information is available on *seriatus* even though it is considered to be an important pest of cotton in the United States.

Even though this is a widespread and relatively commonly collected species, the only known host record is for one specimen taken on *Crotalaria.*

Opuna luzonica, new species

Figures 1358, 1366, 1374–1376

DIAGNOSIS: Recognized by the brown-spotted dorsum with hyaline hemelytra (fig. 1366), the light-colored second antennal segment, the head weakly concave behind, the spination in the males of the pro- and meso-trochanters and femora and protibiae, and the form of the male genitalia, the vesica being C-shaped with a straight, attenuated apical spine, no denticles at the level of the gonopore, the phallotheca more or less linear, and the left paramere with the posterior process thickened and elevated (figs. 1374–1376). Related to *maai* and *ryandi* by the male genitalia and body form.

DESCRIPTION: Macropterous male. Medium-sized, relatively stout-bodied, length apex tylus-cuneal fracture 2.28, width pronotum 1.16; basic coloration dirty yellow, head, pronotum, and scutellum covered with numerous brown spots; hemelytra hyaline with a few brown spots; antennal segments one and two with narrow proximal black bands, segment two with distal one-fourth to one-third black, segments three and four entirely black; metafemora with numerous dark spots; genital capsule dark brown.

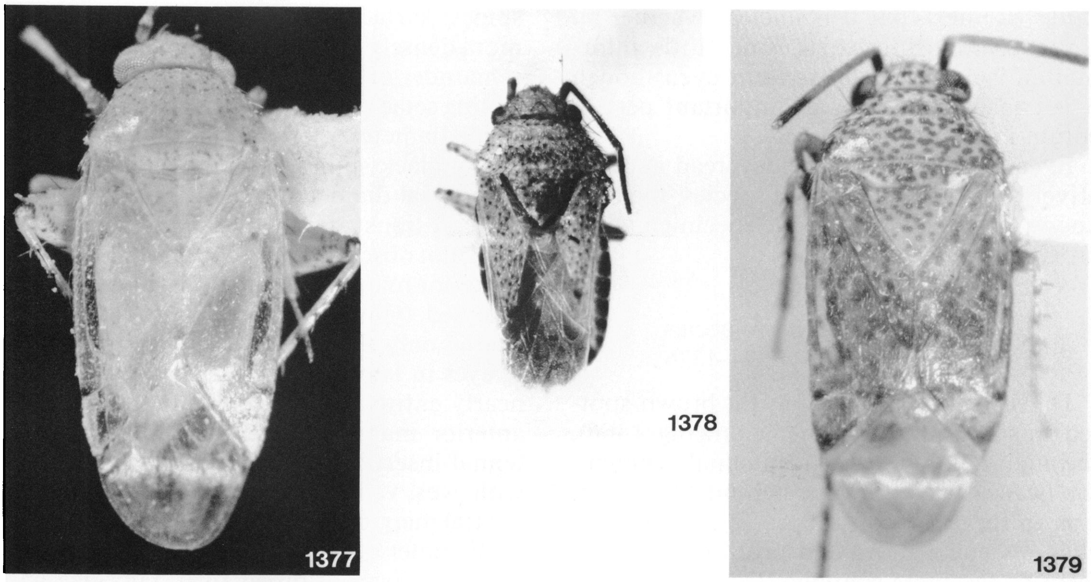
Body surface generally smooth, dull, hemelytra polished and shining; head, pronotum, and scutellum, corium and clavus less densely, covered with black, reclining, common setae and recumbent, woolly, sericeous setae; anterolateral angles of pronotum with a single erect spine; antennal segment one with a few erect black spines, other segments with appressed fine setae; genae below eyes with a few erect long setae; anteroventral surface of procoxae with a row of erect black setae, ventral surface of protrochanters with a field of short black spines, and ventral surface of pro- and meso-femora with 15–20 semierect black spines; surface of protibiae opposing profemora densely covered with short black spines, remainder of protibiae with some slender reclining setae (spines) of length no greater than tibial diameter; meso- and meta-femora with heavy black spines of length slightly greater than tibial diameter and with black bases.

Head transverse, very weakly convex behind, not obscuring anterior pronotal margin, posterior margin of vertex straight, smoothly rounded; tylus not visible in dorsal view, projecting only slightly beyond anterior margin of eyes in lateral view; eyes large, occupying nearly entire height of head in lateral view, anterior margins weakly emarginate at antennal insertion, antennal fossae contiguous with eyes, ventral margin of fossae dorsad of ventral margin of eyes by distance about equal to diameter of antennal segment two; buccal cavity in form of broad oval, bucculae narrow; gula short, inclined; labium reaching to apex of mesocoxae; antennal segment one not swollen, weakly pedunculate, segment two increasing slightly in diameter distally, segments three and four of diameter slightly smaller than proximal portion of segment two; pronotum smooth, rather steeply inclined posteriorly, calli not demarcated, all margins nearly straight, posterolateral angles broadly rounded, lateral margins ecarinate, rounded; mesoscutum broadly exposed, separated from scutellum by a distinct transverse impression; scutellum nearly flat, weakly transversely rounded; posterior margin of cell of membrane broadly rounded, small cell triangular; metatarsal segment one about two-thirds length of segments two and three combined; claws broadened basally, smoothly curved and tapered, pulvilli small and flaplike, parempodia flattened and weakly fleshy, convergent apically.

MALE GENITALIA: Figures 1374–1376. Vesica in the form of a single curve, not sigmoid, with a single attenuated apical spine; phallotheca more or less linear, not bent; left paramere not noticeably boat-shaped, blunt anterior process and a long, heavy, elevated posterior process.

FEMALE: Macropterous. As in male except eyes slightly smaller; antennal dimorphism at most inconspicuous; pro- and meso-legs without conspicuous spination.

FEMALE GENITALIA: Not examined.



FIGS. 1377–1379. *Opuna* spp. 1377. *O. maai*, holotype. 1378. *O. pilosulus*, holotype. 1379. *O. ryandi*, holotype.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the Philippine Island of Luzon.

DISTRIBUTION: Figure 1358. Philippine Islands.

HOLOTYPE ♂: PHILIPPINE ISLANDS: *Luzon:* Mountain Prov., Abatan, Buguias, 60 km. S of Bontoc, 1800–2000 m., May 21, 1964, H. M. Torrevillas collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype but also May 17–19, May 22–23 and June 8, 1964 (AMNH, Bishop), 9♂♂, 2♀♀.

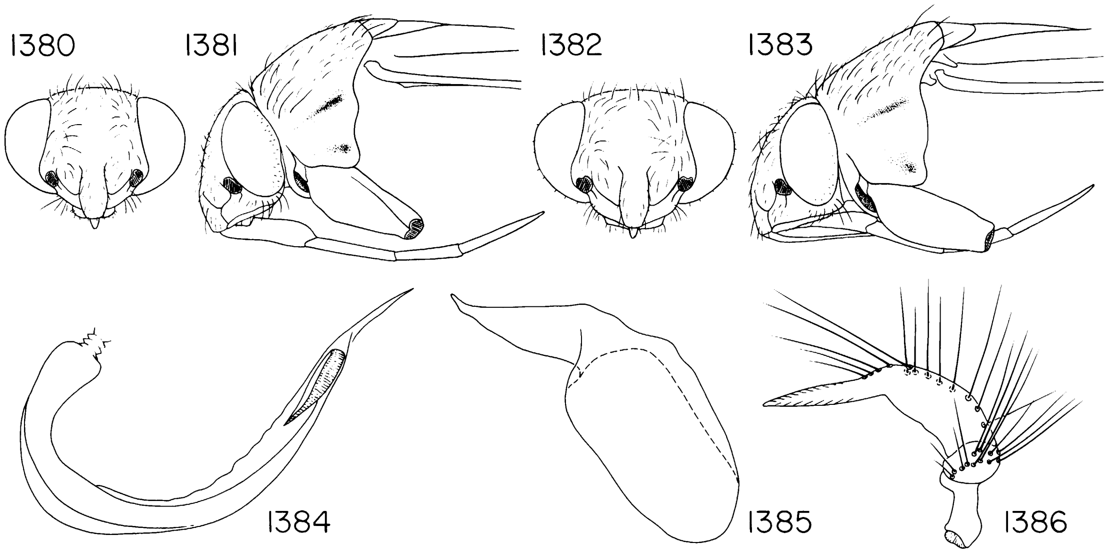
DISCUSSION: This species is unique in the genus by virtue of the spinelike setae on the protrochanters and pro- and meso-femora and protibiae. The only comparable development so far recorded in the Phylinae is in *Decomia gomphocoxa* where only the procoxae have a field of heavy pegs.

Opuna maai, new species
Figures 1358, 1377, 1380–1386

DIAGNOSIS: Similar in structure to *luzonica* and *ryandi*, but differing from the former in having only very small faded spots on the dorsum (fig. 1377) and lacking the spination on the pro- and meso-legs. The male genitalia of *maai* also relate it to *luzonica* and *ryandi* but are distinct in having many erect setae on the dorsal surface of the left paramere, having a linear phallotheca and not having denticles associated with the secondary gonopore (figs. 1384–1386).

DESCRIPTION: Macropterous male. Medium-sized, relatively stout-bodied, ovate, length apex tylus-cuneal fracture 2.10, width pronotum 1.13; basic coloration yellow to yellow-orange, head, pronotum and scutellum with scattered, small, light brown spots, corium and clavus with fewer spots; apex of scutellum, apex of clavus, and apex of corium black, membrane with a transverse infuscate band just posterior to cuneus; antennal segment one with narrow subbasal and distal brown bands, and antennal segment two with a narrow proximal band and distal one-fourth of segment black, segments three and four black; all femora with brown spots, metafemora most conspicuously so; tibial spines black with small black bases.

Body surface smooth, dull, hemelytra weakly shining, subhyaline; dorsum with reclining pale common setae and recumbent, woolly, sericeous setae; anterolateral angles of pronotum with a single erect spine; antennal segment one with a few semierect dark



FIGS. 1380–1386. *Opuna maai.* 1380. Frontal view of head, ♂. 1381. Lateral view of head and prothorax, ♂. 1382. Frontal view of head, ♀. 1383. Lateral view of head and prothorax, ♀. 1384. Vesica. 1385. Phallotheca. 1386. Left paramere.

spines, remaining segments with appressed short setae; genae below eyes with a few long erect setae; pro- and meso-legs without conspicuous spination as in *luzonica.*

Head weakly projecting anteriorly, clypeus barely visible in dorsal view; posterior margin of vertex nearly straight between eyes, rounded, head concave behind and just obscuring anterior margin of pronotum; eyes large, occupying nearly entire height of head in lateral view, anterior margins emarginate at and above antennal insertion; antennal fossae contiguous with anterior margins of eyes, ventral margin of fossae dorsad of ventral margin of eyes by distance slightly greater than diameter of fossa; buccal cavity oval, bucculae narrow, gula short, inclined; labium not quite reaching apex of metacoxae; antennal segment one slightly enlarged, pedunculate, segment two of nearly uniform diameter over entire length, segments three and four of slightly smaller diameter than segment two; pronotum smooth, calli not demarcated, weakly rounded and inclined posteriorly, antero- and postero-lateral angles broadly rounded, anterior and lateral margins nearly straight, posterior margin weakly excavated across mesoscutum; mesoscutum broadly exposed, separated from scutellum by a strong transverse impression; scutellum weakly transversely rounded; posterior margin of cells of membrane rounded, small cell triangular; metatarsal segment one about two-thirds length of segments two and three; claws broadened basally, curved, pulvilli small, flaplike; parempodia weakly fleshy, flattened, convergent apically.

MALE GENITALIA: Figures 1384–1386. Vesica strongly curved, weakly sigmoid, with a rather long, attenuated, apical spine; phallotheca more or less linear, not angled and L-shaped; left paramere as in *luzonica* but with many long setae on dorsal surface.

FEMALE: Macropterous. As in male except body form slightly more ovoid and eyes slightly smaller (compare figs. 1380, 1381 and 1382, 1383); dimorphism in antennal segment two not evident.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for T. C. Maa.

DISTRIBUTION: Figure 1358. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* West Coast Residency, Tenompok, February 13, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype but also

February 15, 1959 (AMNH, Bishop), 4♂♂, 6♀♀. MALAYSIA: *Sabah Prov.*: West Coast Residency: Tenompok, February 10–19, 1959 (Maa; Bishop), 4♀♀; Tenompok, 48 km. E of Jesselton, 1460 m., January 26–31, February 2–4, and February 10–19, 1959 (Maa; Bishop), 4♂♂, 5♀♀.

DISCUSSION: All available specimens of *maai, luzonica,* and *ryandi* were apparently collected in light traps and therefore no host records are available.

Opuna pilosulus (Distant), new combination

Figures 1378, 1394, 1395

Sampisgeranus pilosulus Distant, 1910a, p. 17.

DIAGNOSIS: Recognized by the yellow-green coloration of the dorsum, the dorsum with semierect black setae with brown bases intermixed with woolly, recumbent, sericeous setae, the black antennae except for broad white median annulation on segment one (fig. 1378), the black lora, the totally infuscate venter, and the form of the male genitalia, the vesica sigmoid in shape with a single attenuated apical spine and the left paramere compact with a somewhat elevated posterior process (figs. 1394, 1395). Antennal segment two of the female appears more slender than that of the male and less intensely black, with the mesial half bearing a faint light annulation. General appearance similar to *Ellenia obscuricornis,* but smaller.

MALE GENITALIA: Figures 1394 and 1395.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Sri Lanka; South India.

SPECIMENS EXAMINED: INDIA (South): Kamataka, Kemmangundi, 1200–1500 m., November 11–16, 1977 (Copenhagen), 1♂. SRI LANKA: Hakgala, May 1907, on *Anaphalis oblonga* (BMNH), 1♀ (holotype); Central Prov., Horton Plains, 12 mi. SSE of Nuwara-Eliya, 7000 feet, March 19, 1962, swept on meadow (Brinck, Andersson, Cederholm; Lund), 2♂♂, 1♀.

DISCUSSION: Although *pilosulus* resembles *Ellenia obscuricornis* superficially, the male genitalia do not suggest a necessarily close relationship between the two taxa; they do, however, appear to relate *pilosulus* to *Opuna annulatus* and *Opuna sharpianus* (Kirkaldy). Distant (1910a) recorded *pilosulus* as occurring on *Anaphalis oblonga* D.L. (Asteraceae); no further host information is available.

Opuna ryandi, new species

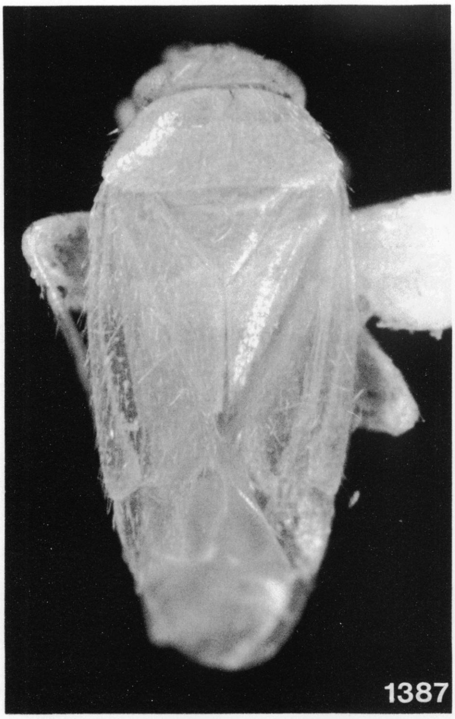
Figures 1358, 1379, 1391–1393

DIAGNOSIS: Similar in structure to *luzonica* and *maai* and to *luzonica* in coloration of the dorsum. Readily recognized by the entirely black first antennal segment and the male genitalia in which the apical spine is sigmoid rather than straight, the secondary gonopore has a number of denticles associated with it, and the phallotheca is angulate.

DESCRIPTION: Macropterous male. Medium-sized, relatively stout-bodied, length apex tylus-cuneal fracture 2.14 (2.03–2.30), width pronotum 1.18 (1.13–1.20); dorsum faded yellow, uniformly covered (including corium and clavus) with medium-sized contrasting brown spots; apical one-half of tylus, antennal segment one entirely, distal two-fifths of antennal segment two, antennal segment three entirely (segment four missing in all available specimens), and apex of cuneus deep castaneous to black; distal one-fifth of mesofemora, distal one-half of metafemora, abdomen lateroventrally, and genital capsule heavily reddish; lora and prothoracic pleuron above coxal cavity brown; labium infuscate apically; tibial spines with black bases.

Body surface smooth, polished, moderately shining, hemelytra subhyaline; head, pronotum, mesoscutum, and base of clavus and corium with heavy, black, reclining setae, remainder of hemelytra with somewhat lighter common setae; entire dorsum covered with recumbent, woolly sericeous setae; anterolateral angles of pronotum with a single erect spine; antennal segment one with a few erect black spines, remaining segments with appressed fine setae; genae below eyes with some erect golden setae; pro- and meso-legs without spination as in *luzonica*; all tibiae with heavy black spines.

Head transverse in dorsal view, weakly convex behind, just concealing anterior margin of pronotum, posterior margin of vertex nearly straight, very sharply rounded; tylus not visible from above; in lateral view head projecting below eyes by about one-fourth the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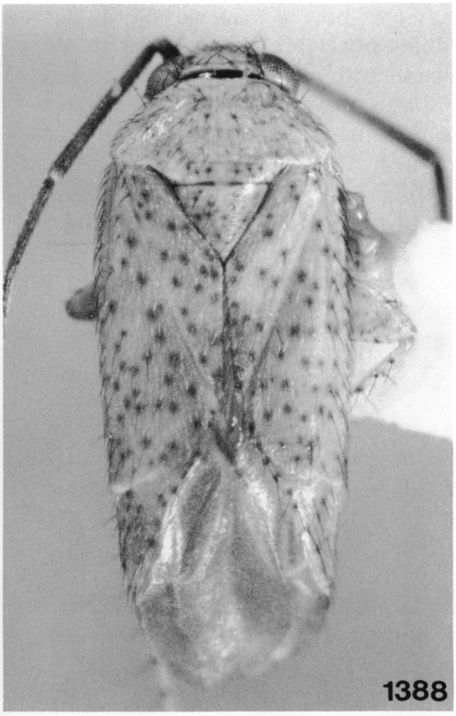
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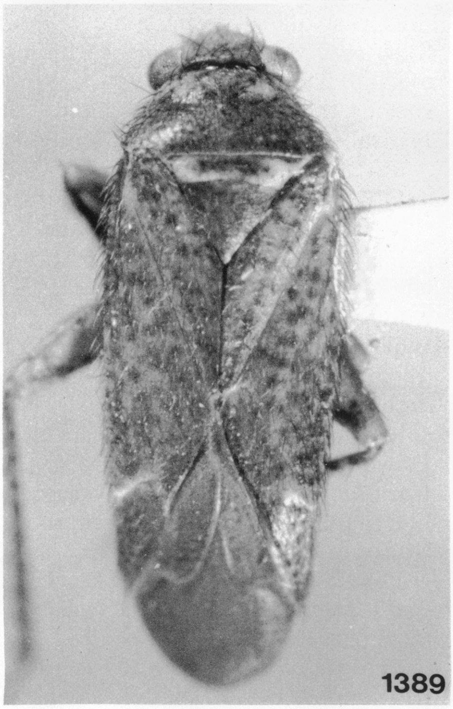
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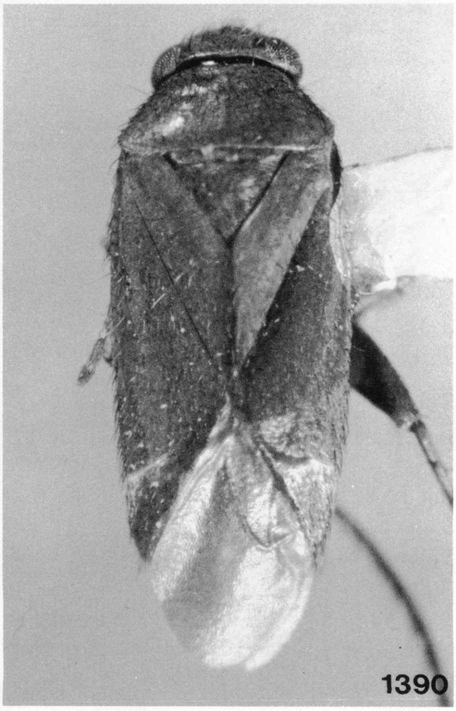
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FIGS. 1387–1390. *Opuna sharpianus*. 1387. Light specimen with pale setae, Oahu. 1388. Greenish specimen with dark setae, Hawaii, Mauna Kea. 1389. Brownish specimen with heavy black setae, Maui, near Puuluau. 1390. Red specimen with black setae, Maui, Haleakala Road.

height of an eye; buccal cavity oval, bucculae narrow, gula short; labium reaching to apex of mesocoxae; antennal segment one not distinctly enlarged, weakly pedunculate, segment two increasing slightly in diameter distally, segment three of slightly smaller diameter than proximal portion of segment one; pronotum smooth, inclined posteriorly, calli undemarcated, antero- and postero-lateral angles broadly rounded, anterior and lateral margins nearly straight, posterior margin weakly concavely excavated across mesoscutum; mesoscutum broadly exposed, demarcated from scutellum by a distinct transverse impression; scutellum weakly transversely rounded; posterior margin of cells of membrane broadly rounded; metatarsal segment one about two-thirds of length of segment two, segments two and three subequal in length; claws broadened basally, curved, pulvilli small, flaplike; parempodia weakly fleshy, flattened, convergent apically.

MALE GENITALIA: Figures 1391–1393. Vesica curved, more or less C-shaped, a field of small denticles at level of secondary gonopore, apical spine sinuously curved, not strongly acuminate; phallotheca strongly bent, L-shaped, clasper of same general shape as in *luzonica,* but lacking numerous heavy setae of *maai.*

FEMALE: Macropterous. As in male, except eyes slightly smaller and antennal segment two of slightly smaller diameter.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for Thomas Ryand.

DISTRIBUTION: Figure 1358. Northern Borneo.

HOLOTYPE ♂: MALAYSIA: *Sabah Prov.:* West Coast Residency, Tenompok, 30 mi. E of Jesselton, 1460 m., February 2–4, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: MALAYSIA: *Sabah Prov.:* West Coast Residency: Ranau, February 22–25, 1959 (Maa; Bishop), 1♂; Tenompok, February 10–14, 1959 (Maa; Bishop), 1♂, 1♀; Tenompok, 4–8 km. E of Jesselton, 1460 m., February 10–19, 1959 (Maa; AMNH), 1♂.

DISCUSSION: See discussion under *luzonica* and *maai.*

Opuna sharpianus (Kirkaldy), new combination

Figures 1359, 1365, 1387–1390, 1396–1402

Psallus sharpianus Kirkaldy, 1902, pp. 131–132, pl. 5.

Psallus sharpianus var. *pelidnopterus* Kirkaldy, 1902, p. 132. NEW SYNONYMY.

Opuna hawaiiensis Kirkaldy, 1902, p. 140. NEW SYNONYMY.

Psallus swezeyi Kirkaldy, 1910, p. 120. NEW SYNONYMY.

Tichorhinus kirkaldyi Perkins, 1911, p. 731. NEW SYNONYMY.

Psallus sharpianus luteus Zimmerman, 1948, p. 187. NEW SYNONYMY.

DIAGNOSIS: Among known species of *Opuna* most easily recognized by the structure of the male genitalia, especially the strongly apically attenuated phallotheca (fig. 1401). Of the species of phylines known to occur in Hawaii, recognized by the form of the male genitalia. It can also be separated from *Spanagonicus albofasciatus* by its linear first and second antennal segments, whereas in the latter species both segments are distinctly swollen in the male. Distinguished from *Rhinacloa forticornis* by the possession of small flaplike pulvilli, whereas in the latter species the pulvilli cover nearly the entire ventral surface of the short straight claws.

MALE GENITALIA: Figures 1400–1402.

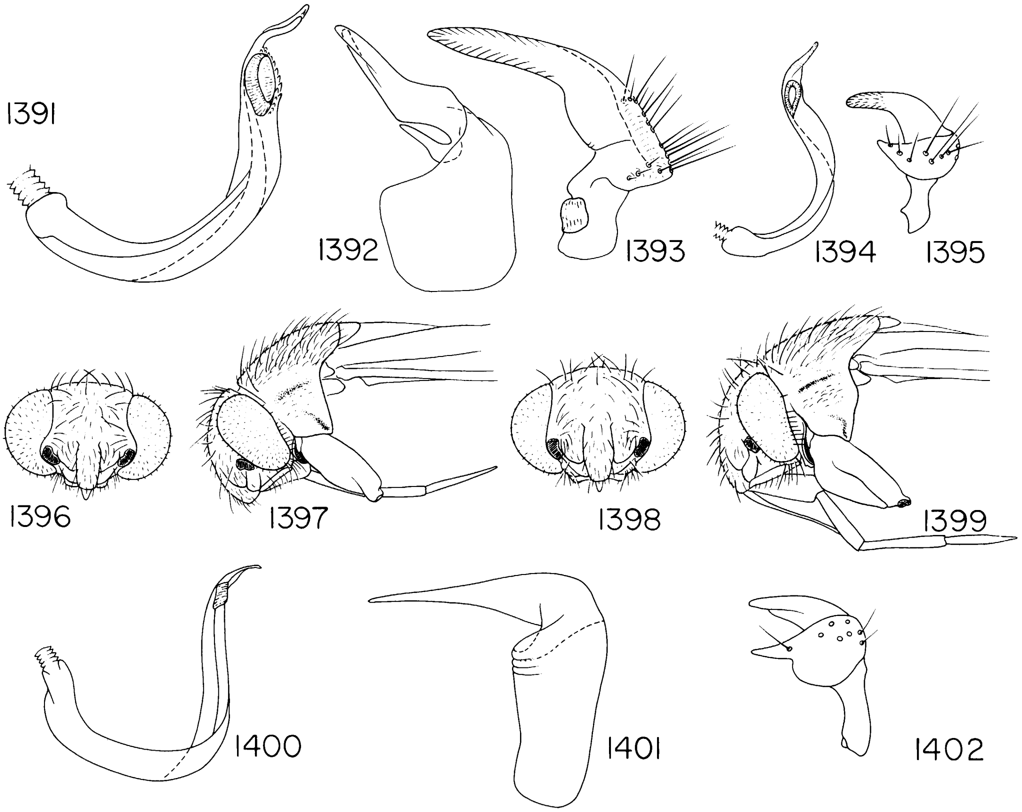
FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 1359. Hawaiian Islands, including Hawaii, Kauai, Maui, and Oahu. Zimmerman's (1948) record from Wake Island is almost certainly a misidentification, probably of *Campylomma wakeana.*

SPECIMENS EXAMINED: 635 specimens from Hawaii, Kauai, Maui, and Oahu. Elevations from sea level to 3100 m. Specimens deposited in the Bishop Museum and the American Museum of Natural History.

DISCUSSION: Kirkaldy (1902) described *Psallus sharpianus* and its variety *pelidnopterus* from the Hawaiian Islands. A few pages later in the same publication he described the new genus *Opuna* with a single included species *hawaiiensis.* Kirkaldy (1910) subsequently described a related species from Ha-



Figs. 1391–1402. *Opuna* spp. 1391–1393. *O. ryandi.* 1391. Vesica. 1392. Phallotheca. 1393. Left paramere. 1394, 1395. *O. pilosulus.* 1394. Vesica. 1395. Left paramere. 1396–1402. *O. sharpianus.* 1396. Frontal view of head, ♂. 1397. Lateral view of head and prothorax, ♂. 1398. Frontal view of head, ♀. 1399. Lateral view of head and prothorax, ♀. 1400. Vesica. 1401. Phallotheca. 1402. Left paramere.

waii, *Psallus swezeyi.* Perkins (1911) described *Tichorhinus kirkaldyi* which was later transferred to *Psallus* by Zimmerman (1948), who published a new name *luteus* for Kirkaldy's (1902) variety "alpha" of *sharpianus.*

Zimmerman (1948) detailed the rather confusing state of affairs pertaining to the taxonomy of *Psallus* Fieber in Hawaii; he also provided a good figure of *P. sharpianus,* and further indicated that *Opuna hawaiiensis* was described by Kirkaldy on the basis of teneral material. Based on comments received from W. E. China of the British Museum, Zimmerman considered *Opuna* as a synonym of *Campylomma* Reuter.

In an attempt to establish more firmly the identity and relationships of these taxa, I dissected specimens from Hawaii assignable to all the above mentioned species and varieties. All the *Psallus* taxa as well as *Opuna hawaiiensis* have indistinguishable male genitalia. It appears that *hawaiiensis* represents nothing more than the extreme light-colored form of a species (or complex) which ranges from totally white with white setae on the dorsum to dark scarlet with heavy black dorsal setae with black basal spots; some specimens are greenish or brownish with black spotting. Any attempt to recognize more than one species will require additional comprehensive collecting and detailed morphological and host studies. Because I have not been able to recognize any pattern of geographic or host variation among these named taxa, I am treating *Opuna hawaiienis* Kirkaldy, *Tichorhinus kirkaldyi* Perkins, *Psallus sharpi-*

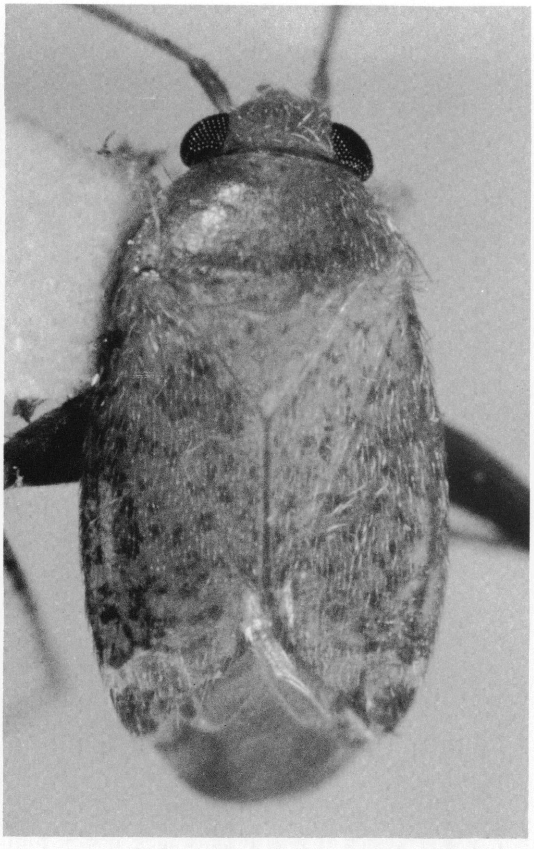


FIG. 1403. *Psallus rubromaculosus*, ♀, Western Samoa, Alafua.

anus Kirkaldy, *P. s. luteus* Zimmerman, *P. s. pelidnopterus* Kirkaldy, and *P. swezeyi* Kirkaldy as junior synonyms of *sharpianus* Kirkaldy, which has date and page priority.

The specimens I have examined are recorded as occurring on *Acacia confusa, Acacia koa, Alphitonia* sp., *Chenopodium oahuense, Cryptocarya* sp., *Cyathodes* sp., *Euphorbia* sp., *Metrosideros* sp., *Myoporus* sp., *Pipturus* sp., *Santalum* sp., and *Sophora chrysophylla.*

PSALLUS FIEBER

Psallus rubromaculosus Knight

Figures 1403–1406

Psallus rubromaculosus Knight, 1935, p. 199.

DIAGNOSIS: Recognized by the yellowish coloration of the dorsum, uniformly covered with bright red spots, the reddish metafemora, the tibial species with red bases, and the form of the male genitalia; general appearance similar to *Campylomma* and *Rubrocuneocoris.*

MALE GENITALIA: Figures 1404–1406.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Samoa.

SPECIMENS EXAMINED: WESTERN SAMOA: *Upolu:* Afiamalu, June 2–July 5, 2200 feet, at light (Swezey, Zimmerman; Bishop), 3♂♂, 2♀♀; Tuaefu, September 16, 1923 (Swezey, Wilder; Bishop), 1♀ (holotype). [*Island ?*]: Alafua, February 4–5, 1969 (Hocking; Bishop), 1♀.

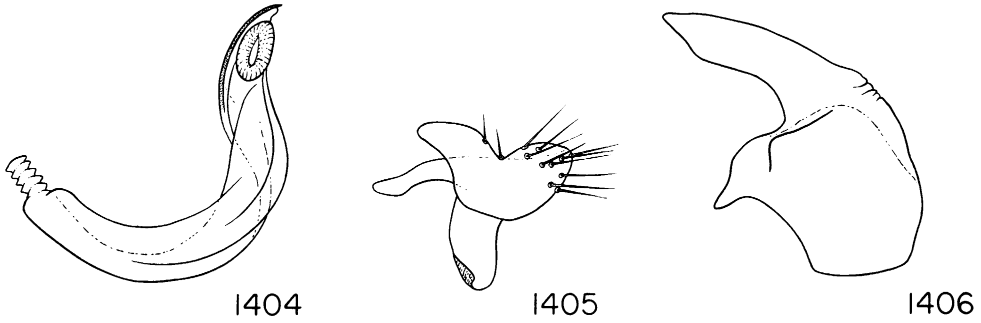
DISCUSSION: Knight (1935) described *rubromaculosus* from a single female specimen. Additional specimens from Samoa appear to represent the same species. This species has no distinctive features which ally it to other members of the fauna, either in general structure of the male genitalia. I have therefore retained its placement in *Psallus.*

RAGMUS DISTANT

Ragmus Distant, 1910a, p. 18.

DIAGNOSIS: *Ragmus* can be recognized by the head which is slightly exserted or weakly concave behind and which at most slightly obscures the anterior margin of the pronotum, the hyaline or subhyaline hemelytra (figs. 1409–1411), the male genital capsule without a ventral keel, the vesica with a row of notches subtending the secondary gonopore (figs. 1419, 1422, 1425), and the left paramere with the posterior process elevated. *Ragmus* differs from *Ellenia* in its somewhat more elongate body form in the males, the absence of a ventral longitudinal keel on the genital capsule (but see also *Ellenia philippinensis*), and the parempodia at most weakly fleshy.

DESCRIPTION: Macropterous male. Medium-sized (range distance apex tylus-cuneal fracture 1.95–2.43, range width pronotum 0.95–1.25), elongate oval to nearly parallel-sided, hemelytra hyaline or subhyaline; coloration from nearly white to orangish and heavily marked with brown spots (figs. 1409–1411); femora always with some dark spots at bases of trichobothria and spines; dorsum weakly to highly polished, impunctate, covered with reclining simple setae of variable color and some decumbent light-colored



FIGS. 1404–1406. *Psallus rubromaculosus,* male genitalia. 1404. Vesica. 1405. Left paramere. 1406. Phallotheca.

woolly setae; all antennal segments with short appressed pubescence; anterolateral angles of pronotum with an erect spine; tibiae with several irregularly placed, black, semierect spines of length slightly greater than tibial diameter, with or without black bases, and several rows of minute spicules over the entire length of the tibiae; meso- and meta-femoral trichobothria as in figures 1413 and 1414.

Head weakly exserted, sometimes concealing anterior pronotal margin; head about twice as wide as long in dorsal view, clypeus at most barely visible from above; frons smoothly convexly rounded in dorsal view; vertex weakly convex, posterior margin nearly straight between eyes, broadly rounded, not carinate, with a transverse row of semierect conspicuous setae; eyes nearly as high as head in lateral view (fig. 1418), emarginate anteriorly, antennae inserted about one-fourth distance above ventral margin of eye, fossae contiguous with anterior margin of eye (fig. 1417); buccal cavity oval, gula obsolete, labium reaching from base of mesocoxae to apex of metacoxae; antennal segment one about as long as anteroposterior length of eye, stout, weakly pedunculate, segment two cylindrical, diameter subequal to that of segment one, length greater than width of head but less than maximum width of pronotum; segments three and four of slightly smaller diameter than two, shorter than segment two; pronotum smoothly rounded, anterior margin about one-third the width of posterior, calli weakly raised, lateral margins nearly straight, angled anteriorly, posterior margin very weakly to broadly and distinctly excavated; mesoscutum broadly exposed, demarcated from scutellum by a distinct transverse suture, scutellum weakly convexly rounded; cuneal fracture short, angled anteromesially, cuneal incisure shallow; small cell of membrane triangular, large cell angled or rounded posteriorly; metathoracic scent-gland evaporatory area as in figure 1415; metatarsal segment one about one-half length of segment two, segments two and three subequal in length; claws long, smoothly curved on dorsal surface, broadened basally, pulvillus small, flaplike, parempodia setiform very weakly fleshy and straight (fig. 1412).

MALE GENITALIA: Vesica S-shaped, rather stout, with a series of notches subtending the well-developed gonopore, running nearly to the base of the vesica in some species; vesica with one or two apical spines, sometimes with small spicules at their apices (figs. 1419, 1422, 1425); phallotheca L-shaped; left paramere with posterior process elevated, either nearly erect or strongly curved, left paramere sometimes flattened and not conspicuously boat-shaped (figs. 1420, 1423, 1426).

FEMALE: Macropterous. Similar to male except body form distinctly ovoid, eyes smaller and not occupying as much of height of head in lateral view and vertex proportionately wider; antennal segment two with little or no sexual dimorphism.

FEMALE GENITALIA: Posterior wall simple.

DISTRIBUTION: Figures 1407 and 1408. India and Sri Lanka west to Viet Nam in the north and the Solomon Islands in the south.

DISCUSSION: Distant (1910a) erected the genus *Ragmus* on the basis of characters which do not distinguish it from many other members of the Phylini. Of all known Old

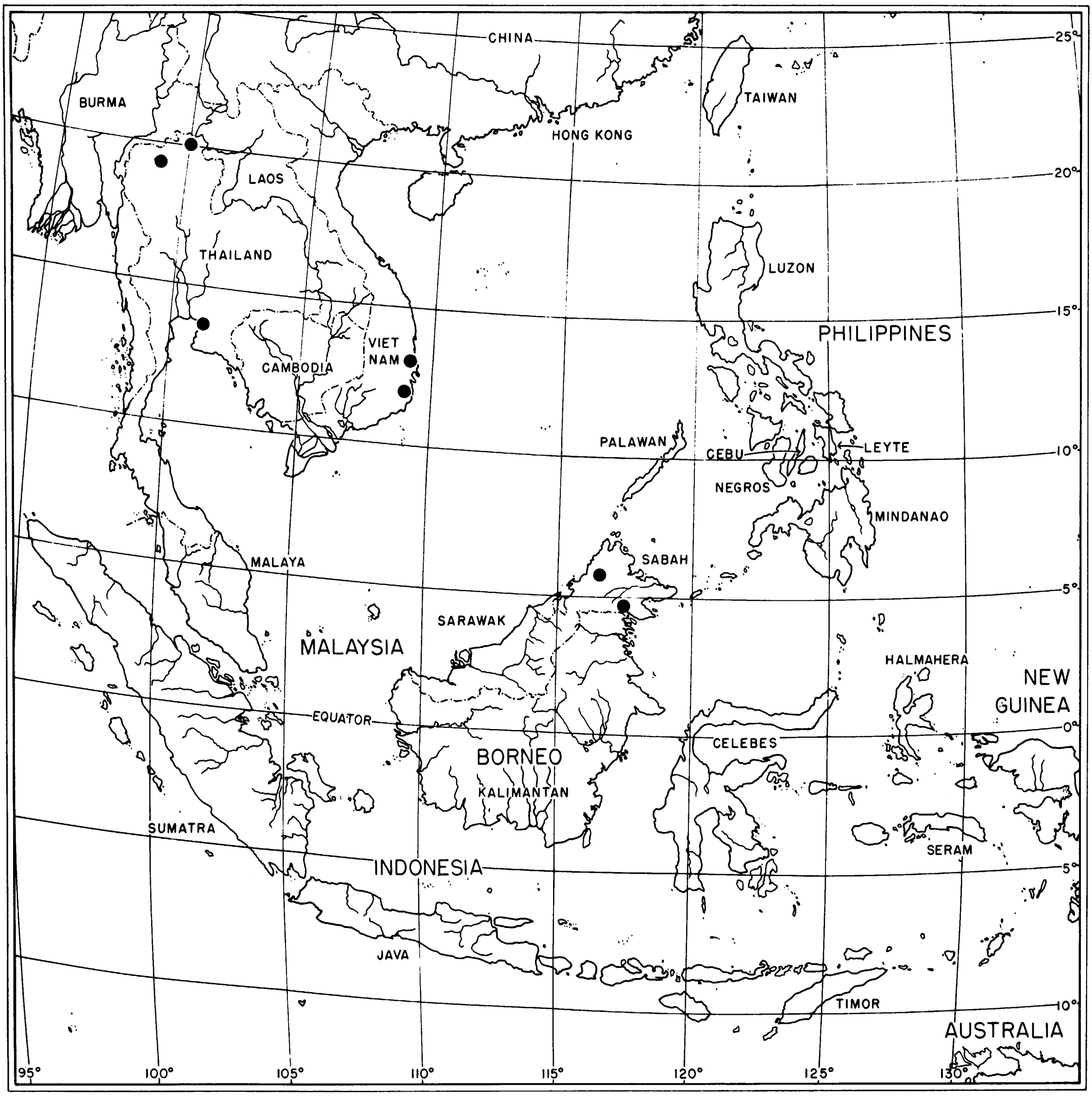

CHINA
BURMA
HONG KONG
TAIWAN
LAOS
THAILAND
LUZON
PHILIPPINES
VIET NAM
CAMBODIA
PALAWAN
CEBU
LEYTE
NEGROS
MINDANAO
SABAH
MALAYA
SARAWAK
MALAYSIA
HALMAHERA
NEW GUINEA
EQUATOR
CELEBES
BORNEO
KALIMANTAN
SUMATRA
SERAM
INDONESIA
JAVA
TIMOR
AUSTRALIA
25°
20°
15°
10°
5°
0°
5°
10°
95°
100°
105°
110°
115°
120°
125°
130°

FIG. 1407. Distribution of *Ragmus importunitas* (in part) (●) (also from India and Sri Lanka).

World tropical Phylini, *Ragmus* is apparently most closely related to *Ellenia*. The two named genera appear to form a group on the basis of the form of the male genitalia in particular, the left clasper having the posterior process strongly elevated (e.g., figs. 1420, 1426) and the vesica with a subapical row of notches along one of the chitinous bands, and one or two apical spines. Also, the head is either weakly exserted or slightly concave behind and at most barely covers the anterior margin of the pronotum, and the hemelytra are generally subhyaline or hyaline. Species of *Ellenia*, as I have defined that group, can be recognized by having fleshy somewhat flattened parempodia and usually have a ventral longitudinal keel on the genital capsule in the male (but see *E. philippinensis*); species here placed in *Ragmus* have at most very weakly fleshy parempodia and always lack the keel on the genital capsule. There do not seem to be any unique defining characters for

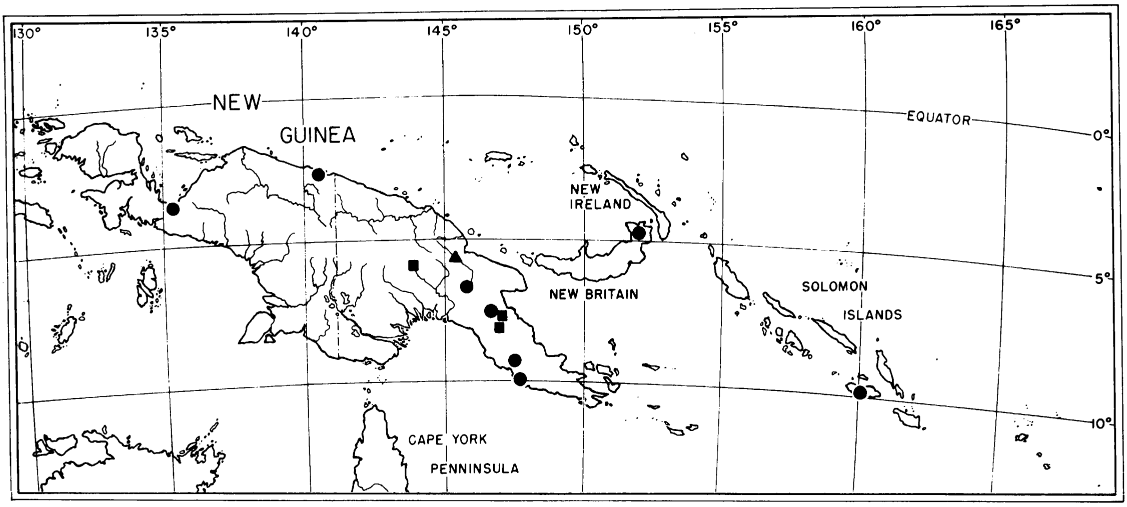


FIG. 1408. Distribution of *Ragmus* spp. (continued). *R. importunitas* (in part) (●); *R. kepilamensis* (▲); *R. schefflerae* (■).

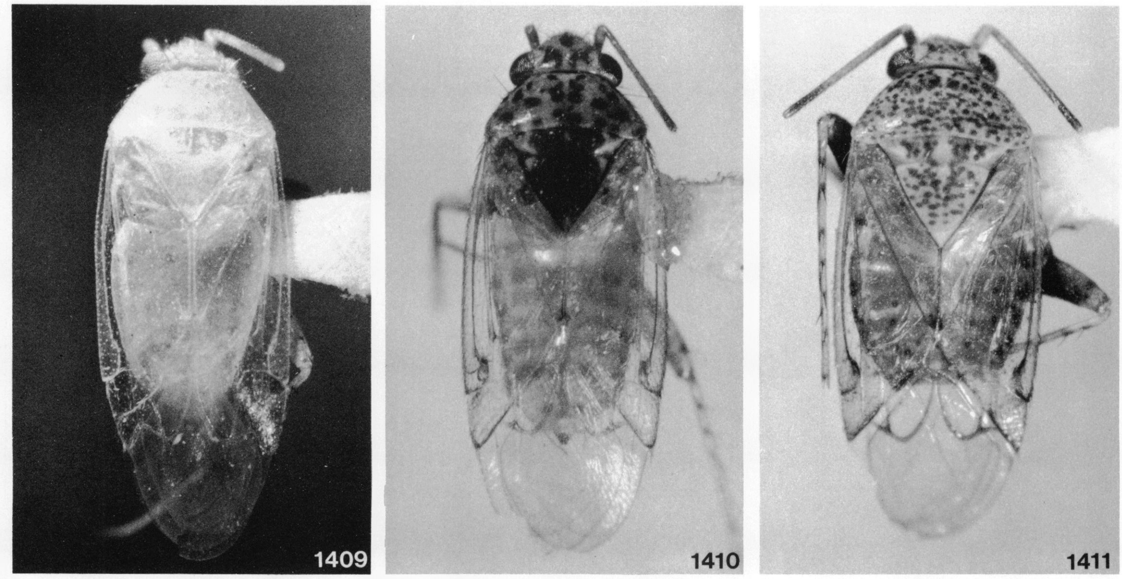
Ragmus, but I have chosen to retain the generic name until additional material is studied for these groups and until we have a better understanding of character distributions within the Phylini as a whole.

The absence of distinctive external features has created problems in the correct generic placement of species of *Ragmus* and *Ellenia* (see Schuh, 1974, pp. 157–158). No heretofore described species that has been placed in the group appears to be congeneric with the type species *importunitas* Distant. Carvalho (1974) synonymized *Ragmus argenteus* Girault, *Ragmus liebnechti* Girault, and *Ragmus pulcher* Girault with *Campylomma livida* Reuter; *Ragmus morosus* Ballard is also a synonym of *C. livida.* Carvalho (1974) transferred *Ragmus seminiricaput* Girault to *Campylomma* as a valid species. Two new species described below appear to be congeneric with *importunitas. Ragmus flavomaculatus* Ballard, *Ragmus pellucidas* Distant, and *Ragmus srilankensis* Carvalho can only be doubtfully placed with *importunitas,* as is discussed below.

At least three described genera from the Palearctic contain species that appear to be related to *Ragmus* and/or *Ellenia.* These are *Chorillus* Kerzhner, 1962 (see Wagner, 1959), *Chrysochnoodes* Reuter viz. *C. rufus* Wagner, 1959, and *Moissonia* Reuter. *Chorillus* spp. and *Chrysochnoodes rufus* have a vesica reminiscent in form to that found in *R. importunitas* and *Ellenia obscuricornis* (Poppius). No male specimens are known for *Moissonia punctata* (Fieber), the only species in that genus, but all characteristics described by Wagner (1975) suggest that it is probably near—possibly conspecific with—the widespread species *Ellenia obscuricornis.* Information available in the literature does not indicate whether the genital capsule possesses a ventral keel in any of the above-mentioned genera. Where illustrated by Wagner (1975), the left paramere is somewhat less strongly modified than in known Asian species.

No documented members of *Ragmus* or *Ellenia* appear to occur in the western Pacific east of the Solomon Islands. Nonetheless Carvalho (in Carvalho and Gagné, 1968) described a species *citrina* from the Galapagos Islands in the genus *Campylomma,* which, based on the provided genitalic illustrations, is apparently a species of *Ragmus* or *Ellenia*; the apparent absence of notches on the vesica may be the result of the limitations of the optical equipment used in preparing the drawings. As indicated in the "Notes on Additional Specimens" under *Ellenia,* a single female resembling *Ellenia philippinensis* is known from Fiji.

ADDITIONAL SPECIMENS: Four male specimens (AMNH, Bishop), possibly representing four additional species are known from



Figs. 1409–1411. *Ragmus* spp. 1409. *R. importunitas,* ♂, India, Madras State, Anamalai Hills. 1410. *R. kepilamensis,* ♂, Papua New Guinea, Madang Prov., Mt. Williams. 1411. *R. schefflerae,* holotype.

eastern New Guinea. Twenty-three females (AMNH, Bishop), possibly representing *Ragmus* species are known from Viet Nam, Java, Sumatra, northern Borneo, and New Guinea.

Ragmus importunitas Distant

Figures 1407–1409, 1412–1421

Ragmus importunitas Distant, 1910a, p. 18.

Diagnosis: Most easily recognized by the invariable form of the male genitalia, the vesica with a single apical spine with several apical spicules (fig. 1419) and the left paramere with an elevated and strongly curved posterior process (fig. 1420); size, coloration, and spotting somewhat variable.

Description: Macropterous male. Moderate-sized, elongate, length apex tylus-cuneal fracture 2.03–2.28, width pronotum 0.95–1.05; basic coloration yellow-white, sometimes tinged with green to light yellow-brown and dorsum with smaller dark brown spots at bases of common setae on dorsum; hemelytra sometimes clouded with white and subhyaline (fig. 1409); antennal segment one with a narrow dark ring basally; dark spots at bases of trichobothria and spines on all femora.

Meso- and meta-femoral trichobothria as in figures 1413 and 1414.

Labium reaching from between apices of pro- and meso-coxae to apices of metacoxae; metathoracic scent-gland evaporatory area as in figure 1415 (see also fig. 1416); pretarsus as in figure 1412.

Male Genitalia: Figures 1419–1421. Vesica with a single apical spine with apical spicules; left paramere with posterior process strongly curved.

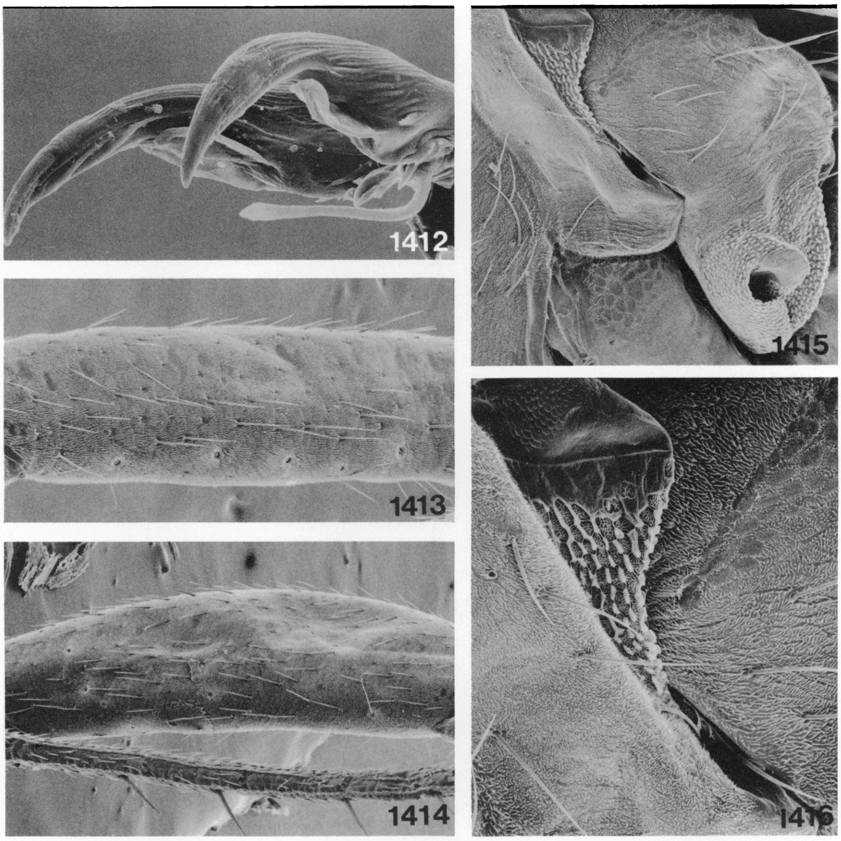
Female: Macropterous. See generic description.

Female Genitalia: Posterior wall simple.

Measurements: See Appendix.

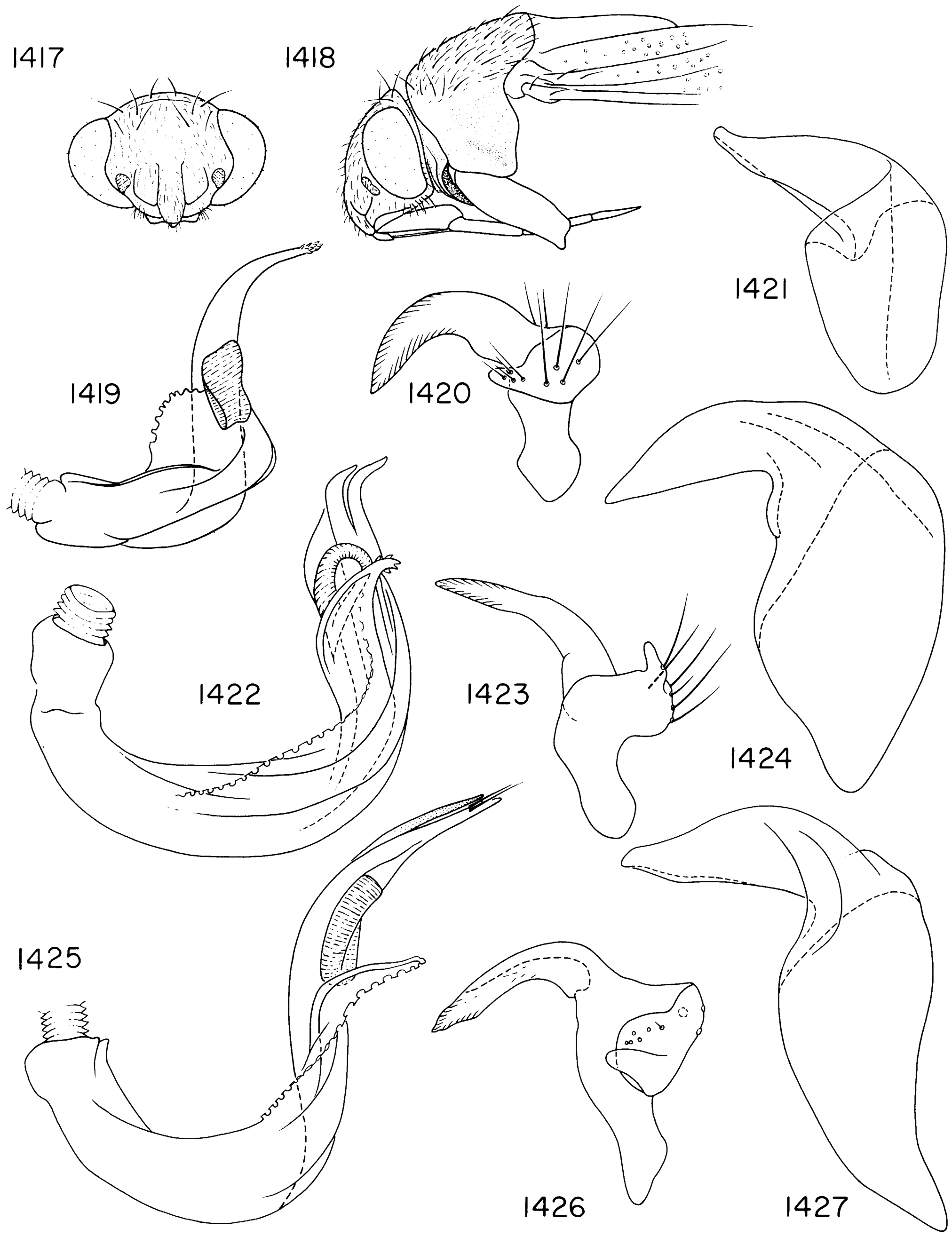
Distribution: Figures 1407 and 1408. India and Sri Lanka west to Viet Nam in the north and the Solomon Islands in the south.

Specimens Examined. INDIA: *Assam:* Chabua, October 28, 1943–November 29, 1943 (Hardy; USNM), 1♂, 1♀. *Delhi:* New Delhi, October 9, November 1–30, 1967 (Gibson; AMNH, USNM), 12♂♂, 9♀♀; Delhi, October 15, 1961, at light (Oman; AMNH, USNM), 9♂♂, 2♀♀. *Madras:* Anamalai Hills, Cinchona, 1050 m., November 1965 (Nathan; Bishop), 4♂♂, 2♀♀. *West Bengal:* Santini Ketan, Birbhum District, October 1937 (Maa; Bishop), 1♂. INDONESIA: *West Irian:* Hol-



FIGS. 1412–1416. *Ragmus importunitas.* 1412. Pretarsus. 1413. Mesofemur, showing trichobothria. 1414. Metafemur, showing trichobothria. 1415. Lateral view of metathorax, showing scent-gland evaporatory area. 1416. Detail of small evaporatory area, from figure 1415.

landia, March 13, 1960, sweeping (Maa; Bishop), 1♂; Nabire, S of Geelvink Bay, 1–50 m., July 9, August 25–October 10, 1962, in jungle, light trap (Holtmann; AMNH, Bishop), 4♂♂, 18♀♀. MALAYSIA: *Sabah Prov.:* Tawau Residency: Tawau District, Kalabakan, November 8–15, 1958, primary forest (Maa; AMNH, Bishop), 3♂♂, 2♀♀; Tawau, Quoin Hill, cocoa research station, September 13, 1962, malaise trap (Hirashima; Bishop), 1♀. West Coast Residency: Ranau, 500 m., September 28–October 11, 1958 (Quate and Maa; Bishop), 3♂♂, 11♀♀. PAPUA NEW GUINEA: *Central Prov.:* Port Moresby, August 4, 1972 (Scudder; Bishop), 1♀; NE of Port Moresby, Bisianumu, 150 m., June 19, 1957 (Hardy; Bishop), 1♀; Tapini, 800–1100 m., November 1968 (Krauss; Bishop), 1♂. *East New Britain Prov.:* Gazelle Peninsula, Malmalwan-Vunakanau, May 5–11, 1956, light trap (Gressitt; Bishop), 1♂. *Eastern Highlands Prov.:* Aiyura, 1620 m., October 19–24, 1959, sweeping (Maa; Bishop, AMNH), 13♂♂, 17♀♀. *Morobe Prov.:* Wau, 1200 m., September 27–30, 1962 (Sedlacek; Bishop), 1♂; Wau, Hospital Creek, 1200 m., January 12, 1965, light trap (Sedlacek; Bishop), 1♀. SRI LANKA: *Sabarangamuwa Prov.:* Kitugala, 21 mi. N of Ratnapura, March 17, 1962, at light (Brinck, Andersson, Cederholm), 1♂, 1♀; Rakwana, February 27, 1962, at light (Brinck, Andersson, Cederholm), 2♂♂, 3♀♀. [*Prov. unknown*]: Kandy, March 8, 1896 (Madarasz; Budapest), 1♂, 1♀, 1 nymph; Paradeniya (Green; BMNH), 3♂♂ (including lectotype), 5♀♀. SOLOMON ISLANDS: *Guadalcanal:* Ilu Farm nr. Nalimbu River, 5 m., July 1, 1956 (Gressitt; Bishop), 1♀; Kukum, January 15, 1964 (McQuillan; BMNH), 2♀♀. THAILAND: Chiangdao, April 5–11, 1958



FIGS. 1417–1427. *Ragmus* spp. 1417–1421. *R. importunitas.* 1417. Frontal view of head, ♂. 1418. Lateral view of head and prothorax, ♂. 1419. Vesica. 1420. Left paramere. 1421. Phallotheca. 1422–1424. *R. kepilamensis.* 1422. Vesica. 1423. Left paramere. 1424. Phallotheca. 1425–1427. *R. schefflerae.* 1425. Vesica. 1426. Left paramere. 1427. Phallotheca.

(Maa; Bishop), 2♂♂; Pak Chong, December 1–3, 1957 (Gressitt; Bishop), 6♂♂, 5♀♀; Pangmakampon (Pankampawng) nr. Fang, 450 m., November 15–16, 1957 (Maa; Bishop), 2♂♂, 4♀♀; Sattahib area, November 24, 1957 (Maa; Bishop), 1♂, 2♀♀. VIET NAM: Dalat, 1500 m., September 26–27, 1960 (Yoshimoto; Bishop), 2♂♂, 1♀; M'Drak E of Ban Me Thout, 400–600 m., December 18–19, 1960 (Yoshimoto; Bishop), 3♂♂, 2♀♀.

DISCUSSION: *Ragmus importunitas* is variable in size and coloration. The form of the male genitalia is extremely constant and there is no obvious pattern in the external variation in available specimens. Therefore, I am treating this widely distributed taxon as a single species.

Distant described *importunitas* from Peradeniya, Ceylon based on material collected by Green. He gave no indication as to how many specimens he had seen. The British Museum provided me with a card on which were mounted three male and five female specimens of a single species. The identification label reads "*Ragmus importunitas* Dist. type." I have placed each of these specimens on a separate pin, relabeled them, and designated one of the males as a lectotype by affixing the following label: "LECTOTYPE, *Ragmus importunitas* Distant, det R.T. Schuh."

Distant (1910a) indicated that *importunitas* punctures the leaves of *Crotalaria verrucosa* and *Crotalaria incarna.* No further host information appears to have become available in the meantime.

Ragmus kepilamensis, new species

Figures 1408, 1410, 1422–1424

DIAGNOSIS: Recognizable by the very large dark brown spots on the head and pronotum, the scutellum with a single broad median longitudinal stripe or pair of stripes, the elongate slender body (fig. 1410), and the vesica with two apical spines and a very long row of notches terminating in a sclerotized projection composed of several spicules (fig. 1422); the posterior process of the left clasper is elevated but not curved (fig. 1423).

DESCRIPTION: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture 2.23, width pronotum 1.09; basic coloration light orange-brown or yellow-brown; hemelytra, including cuneus and veins of membrane hyaline, legs somewhat lighter than general coloration of dorsum, thoracic pleuron strongly orangish, abdomen laterally on dorsum and venter dark brown; antennal segment one and segment two except for distal one-fourth light yellow-brown, distal one-fourth of segment two and segments three and four dark brown; head and pronotum with several large brown spots; mesoscutum irregularly brown along posterior pronotal margin; scutellum dark brown except for lateral angles and faint median stripe; all femora with faint brown spots; tibial spines with brown bases.

Labium reaching to about apex of metacoxae.

MALE GENITALIA: Figures 1422–1424. Vesica with two sharply bent apical spines and a long row of notches terminating in a sclerotized projection with several spicules; left paramere somewhat splayed out, the posterior process elevated and not curved.

FEMALE: Macropterous. As in male except abdomen totally light yellow-brown and body form slightly more ovate and labium reaching to middle of ovipositor.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Figure 1408. Eastern New Guinea.

ETYMOLOGY: Named for the type locality.

HOLOTYPE ♂: PAPUA NEW GUINEA: [*Prov. unknown*]: Kepilam, 2400 m., June 20–22, 1963, light trap, J. Sedlacek collector; deposited in the B. P. Bishop Museum, Honolulu.

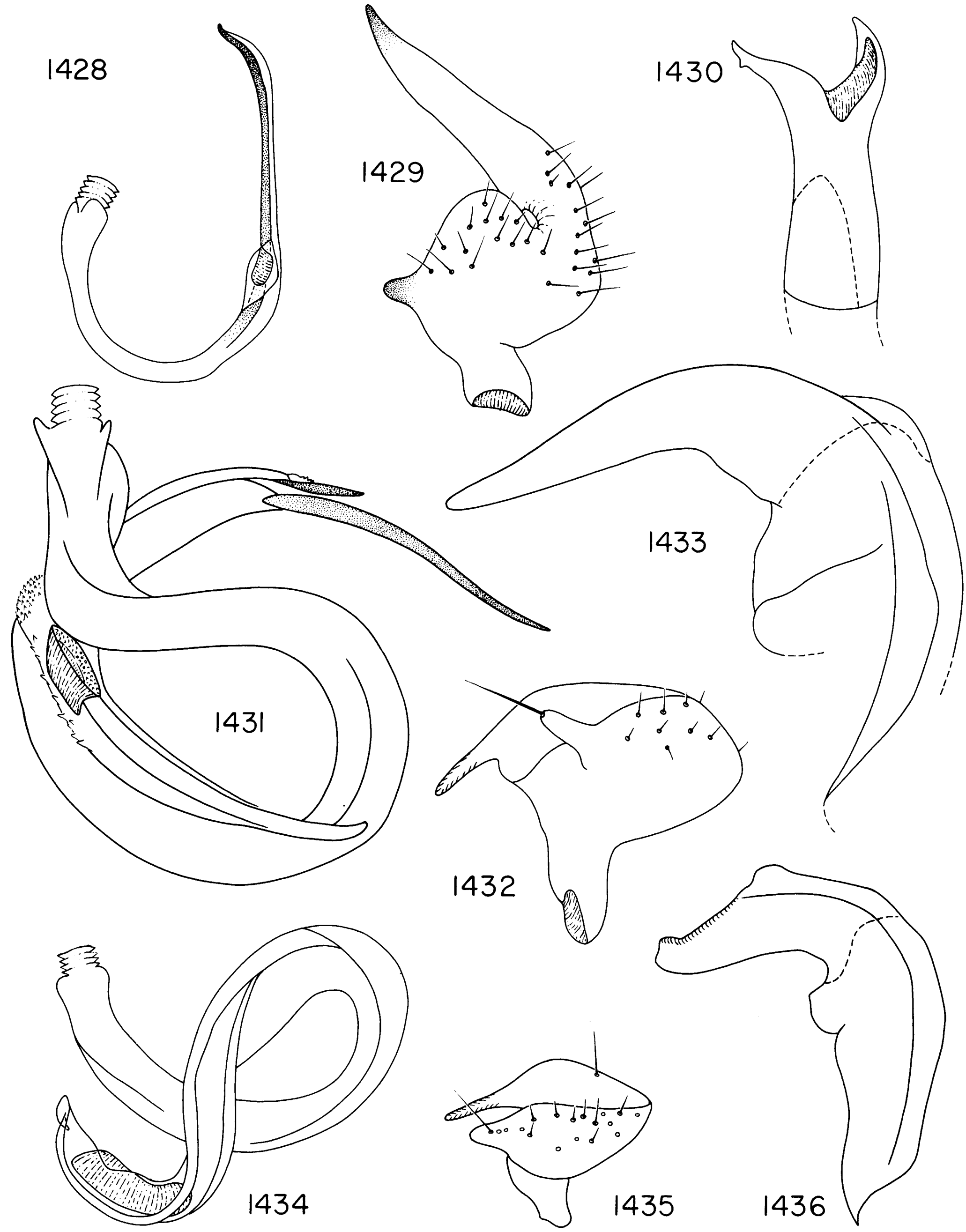
PARATYPES: Same data as holotype, but June 21–23, 1963 (Bishop, AMNH), 2♂♂, 3♀♀. PAPUA NEW GUINEA: *Madang Prov.:* Mt. Wilhelm, 3000 m., July 2, 1955 (Gressitt; Bishop), 1♀.

Ragmus schefflerae, new species

Figures 1408, 1411, 1425–1427

DIAGNOSIS: Recognized by the pepper-spotted head, pronotum, scutellum, clavus, and corium (fig. 1411), the metafemora often infuscate distally, the vesica with two straight apical spines, the form of the row of notches subtending the secondary gonopore (fig. 1425), and the left clasper with the posterior process elevated and strongly curved (fig. 1426).

DESCRIPTION: Macropterous male. Moderate-sized, length apex tylus-cuneal fracture 2.32, width pronotum 1.18; light yellow-or-



FIGS. 1428–1436. *Ragmus* spp. 1428–1430. *Ragmus flavomaculatus.* 1428. Vesica. 1429. Left paramere. 1430. Phallotheca. 1431–1433. *Ragmus pellucidas.* 1431. Vesica. 1432. Left paramere. 1433. Phallotheca. 1434–1436. *Ragmus srilankensis.* 1434. Vesica. 1435. Left paramere. 1436. Phallotheca.

ange or yellow-brown, head, pronotum, mesoscutum, and scutellum uniformly and densely covered with small brown spots, clavus and corium less densely spotted; inner margin of costal vein, outer and inner margin of clavus, and veins of membrane suffused with reddish brown; basal rings of antennal segments one and two, antennal segment two distally, and segments three and four, abdomen lateroventrally, posterior one-half of all abdominal tergites and connexiva and genital capsule, and apex of labium brown; distal two-thirds of metafemora (except near tibiofemoral articulation) more or less strongly suffused with brown; all femora with spines and trichobothria with brown bases, all tibial spines black with brown bases.

General structure, vestiture, and surface texture as in generic description; labium just surpassing apex of metacoxae.

MALE GENITALIA: Figures 1425–1427. Vesica with two straight apical spines with two spicules apically, row of notches directed away from body of vesica; posterior process of left paramere curving.

FEMALE: Macropterous. Basic structure as in male; abdominal venter almost totally light yellow-brown, weakly infuscate laterally; metafemora only weakly infuscate on distal two-thirds.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for its occurrence on *Schefflera.*

DISTRIBUTION: Figure 1408. Eastern New Guinea.

HOLOTYPE ♂: PAPUA NEW GUINEA: *Morobe Prov.:* McAdam Park, 1200 m., September 4, 1971, on *Schefflera* inflorescence, W. C. Gagné collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: PAPUA NEW GUINEA: *Morobe Prov.:* Edie Creek Road, 1600 m., September 8, 1971, on *Schefflera* inflorescence (Gagné; Bishop, AMNH), 6♂♂, 2♀♀. *Southern Highlands Prov.:* ridge W of Dimifa, S of Mt. Giluwe, 2350 m., October 11, 1958 (Gressitt; Bishop), 1♀.

Ragmus flavomaculatus Ballard
Figures 1428–1430

Ragmus flavomaculatus Ballard, 1921, p. 510.

DIAGNOSIS: Recognized by the elongate body, the head not concave behind but with the posterior margins of the eyes contiguous with the anterior margin of the pronotum, the weakly protruding clypeus, the off-white coloration of the body with contrasting yellow-orange markings on the dorsum, the femora with some small dark spots, and the form of the male genitalia, the vesica C-shaped with a very long slender apical process, the secondary gonopore well developed, the phallotheca more or less linear and opening apically like a parrot's beak (at least in the available dissection), and the left paramere splayed out with a nearly erect and enlarged posterior process; pretarsal structures not visible in available specimens.

MALE GENITALIA: Figures 1428–1430.

FEMALE GENITALIA: Not available.

MEASUREMENTS: Only available specimen mutilated.

DISTRIBUTION: India, Coimbatore.

SPECIMEN EXAMINED: INDIA: *Madras:* Coimbatore, June 27, 1921, from cotton (BMNH), 1♂.

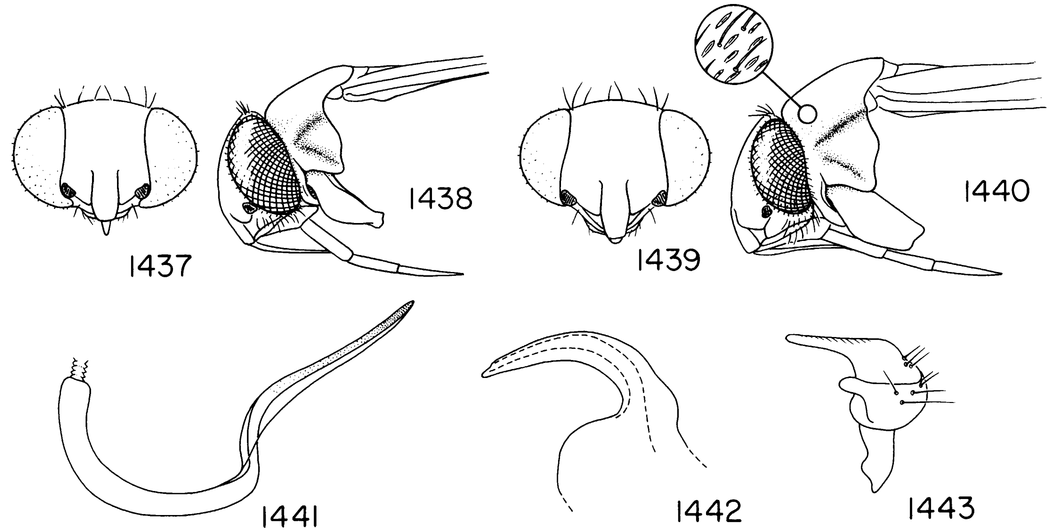
DISCUSSION: Based on the form of the male genitalia, *Ragmus flavomaculatus* shows no close relationship with the type of the genus, *Ragmus importunitas* Distant. The vesica, with its long apical spine is similar to that found in *Badezorus tyrianus* Distant; the left clasper resembles somewhat that of several species I have placed in *Opuna* Kirkaldy; the phallotheca does not indicate a relationship with other known taxa from the study area. The general appearance is much like that of *Ragmus pellucidus* Distant, but that species lacks the distinctive yellow-orange spots present on the dorsum of *flavomaculatus.* Until knowledge of the Indo-Malayan fauna improves, I have chosen not to reassign or create a new genus for *flavomaculatus*; nonetheless, its assignment to *Ragmus* must be considered provisional and simply a placement of convenience.

Ballard (1921) found this species feeding on cotton in association with *Campylomma livida* Reuter. He noted that it also feeds on aphids and thrips.

Ragmus pellucidus Distant
Figures 1431–1433

Ragmus pellucidas Distant, 1910a, p. 19.

DIAGNOSIS: Recognized by the elongate, parallel-sided body form, the head not concave behind, the posterior margins of the eyes contiguous with the anterior margin of the pronotum, the clypeus slightly visible from



FIGS. 1437–1443. *Rhinacloa forticornis*. 1437. Frontal view of head, ♂. 1438. Lateral view of head and prothorax, ♂. 1439. Frontal view of head, ♀. 1440. Lateral view of head and prothorax, ♀. 1441. Vesica. 1442. Phallotheca. 1443. Left paramere.

above, the dorsum monotonous dirty white, the femora with a few small dark spots, the male genitalia large, the vesica forming one complete coil, the secondary gonopore well developed and attended by a number of barbules, the apex of the vesica extending well beyond the secondary gonopore, with one short and one long, attenuated, sclerotized spine, the phallotheca L-shaped, attenuated apically, and the left paramere deep-bodied, and of a form common to many phylines. The claws are curved, narrowed apically, with small flaplike pulvilli; the parempodia are setiform.

MALE GENITALIA: Figures 1431–1433.

FEMALE GENITALIA: Not available.

MEASUREMENTS: See Appendix.

DISTRIBUTION: India.

SPECIMENS EXAMINED: INDIA: Simla Hills, Dharampur, May 14, 1908, *ca.* 5000 feet (BMNH), 1♂.

DISCUSSION: Distant (1910a) commented in his original description that *pellucidas* "seems to be quite distinct from its Ceylonese ally" *importunitas*. Such is certainly the case, and I find no external or genitalic characters which convincingly ally the two species. Until our knowledge of the Indo-Malayan faunas improves, I have chosen to leave *pellucidas* associated with the generic name *Ragmus*, a placement which must be considered provisional and simply one of convenience.

Ragmus srilankensis Carvalho

Figures 1434–1436

Ragmus srilankensis Carvalho, 1976, p. 318.

DIAGNOSIS: Recognized by the elongate slender body, the light coloration, the head concave behind and not projecting anteriorly, the delicate brown punctures on the hemelytra, and the form of the male genitalia, with the vesica forming a single complete coil, the secondary gonopore large, the vesica terminating in a short, blunt "spine," the phallotheca L-shaped and blunt apically, and the left paramere of a form found in many phyline taxa.

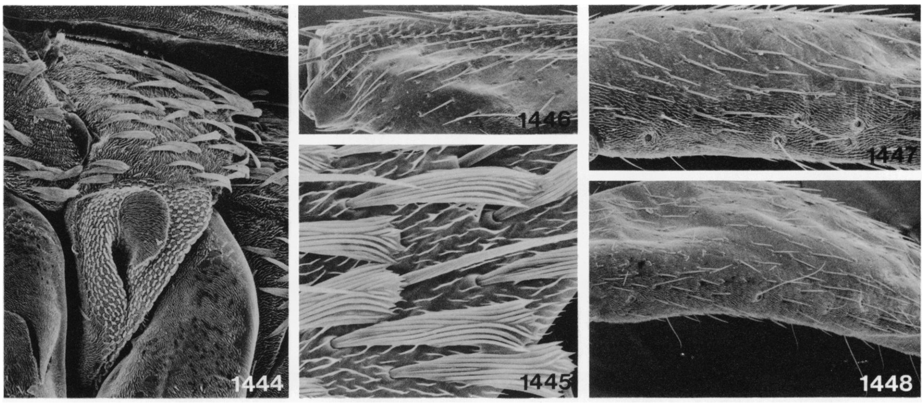
MALE GENITALIA: Figures 1434–1436.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: Length 2.4, width 1.0, length head .08, width head .4, width vertex .16, length pronotum .2, width pronotum .7, length cuneus .4; antennal segments: 1—.01, 2—.07, 3—.3, 4—.4 (from Carvalho, 1976).

DISTRIBUTION: Sri Lanka.

SPECIMENS EXAMINED: SRI LANKA: *West Prov.*: Colombo District, Colombo, January 28, 1975 (Krombein; USNM), 1♂, 1♀ (paratypes).



Figs. 1444–1448. *Rhinacloa forticornis.* 1444. Lateral view of metathorax, showing scent-gland evaporatory area and flattened setae. 1445. Detail of flattened setae, on hemelytra. 1446. Spicules distally on dorsal surface of metafemur. 1447. Mesofemur, showing trichobothria. 1448. Metafemur, showing trichobothria.

Discussion: Carvalho (1976) noted that *srilankensis* "approaches *Ragmus importunitas* Distant, 1910, but differs by the color of the body and the structure of the male genitalia." In fact, there seems little reason to think that *srilankensis* and *importunitas* are closely related. Because available specimens of *srilankensis* are in rather poor condition and the male genitalia lack distinctive characters that ally them with other known Phylinae, I do not find it possible to place *srilankensis* in any described genus, and I have therefore left it in *Ragmus* provisionally.

RHINACLOA REUTER

Rhinacloa Reuter, 1876, p. 88.

Diagnosis: *Rhinacloa forticornis,* the only species in the genus occurring in the study area, can be recognized by the short, posteriorly concave head, the thick vestiture of appressed scalelike setae covering the entire body (figs. 1444, 1445), the row of small spicules on the distal one-half of the dorsal surface of the metafemora (fig. 1446), the setiform parempodia, the large pulvilli covering the entire ventral surface of the straight claws, and the structure of the male genitalia, with the vesica in the form of a simple tube, attenuated apically and with no developed secondary gonopore (figs. 1441–1443). Antennal segment two in the males is tubular and stout, whereas in the females that segment is baseball-bat-shaped; the eyes in the females are smaller than in males and the vertex is relatively wider (compare figs. 1437, 1438 and 1439, 1440).

Distribution: In the study area known only from the Hawaiian Islands. Also known from southern United States south to central Chile.

Discussion: The above diagnosis will allow for the recognition of *Rhinacloa forticornis* in Hawaii. It does not, however, recognize the variation encompassed by the 18–20 additional described species currently assigned to the genus, of which *forticornis* is the type.

The problems of assignment of species to *Rhinacloa* as currently diagnosed can be seen in the following examples. Ghuari (1961) described a species *queenslandana* from Australia which should be placed in *Campylomma* (Onder, 1973). Carvalho (in Carvalho and Gagné, 1968) described three species in the genus *Psallus* (and one of *Rhinacloa*) from the Galapagos, all of which should be placed in *Rhinacloa* on the basis of the male genitalia.

Rhinacloa forticornis Reuter

Figures 1437–1448

Rhinacloa forticornis Reuter, 1876, p. 80.

Diagnosis: Recognized by the characters given in the generic diagnosis; appressed scalelike setae as in figures 1444 and 1445; metathoracic scent-gland evaporatory area as in figure 1444; spicules on dorsal surface of metafemur as in figure 1446; meso- and metafemoral trichobothria as in figures 1447 and 1448.

MALE GENITALIA: Figures 1441–1443.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: Hawaiian Islands. Also recorded from the southern United States south to Peru and Brazil.

SPECIMENS EXAMINED: HAWAIIAN ISLANDS: *Hawaii:* Pohakuloa, sea level, June 17, 1966, ex *Chenopodium oahuense* (Beardsley; Bishop), 3♂♂, 2♀♀. *Kauai:* near Kalalau Lookout, July 23, 1968 (Gagné; Bishop), 2♂♂; Kokee, July 22–25, 1968, at light (Gagné; Bishop), 2♂♂. *Lanai:* Lahaihale, 3000 feet, July 12, 1968 (Gagné; Bishop), 12♂♂, 10♀♀. *Maui:* Kahakapoa Gulch, above Olinda, 1500 m., August 5, 1968, ex *Styphelia* sp. (Gagné; Bishop), 1♂, 3♀♀; Ulupalakua, 1850 feet, August 7, 1968 (Gagné; Bishop), 4♂♂, 6♀♀. *Molokai:* Kawela Gulch, 1068–1144 m., July 8–10, 1968 (Gagné; Bishop), 4♂♂, 8♀♀; Kamoku Flats, 3550 feet, July 9, 1968 (Gagné; Bishop), 1♂, 2♀♀; central part of island, 1000 feet, July 10, 1968 (Gagné; Bishop), 1♂, 2♀♀. *Oahu:* Honolulu, May 22–23, 1959 (Hocking; Bishop), 1♀; Mt. Kaala, 1200 m., July 18, 1968 (Gagné; Bishop), 1♂, 3♀♀.

DISCUSSION: The species is apparently introduced into Hawaii. It was not recorded by Zimmerman (1948). All known collections date from 1959 and later. The only recorded hosts in Hawaii are *Chenopodium oahuense* and *Styphelia* sp.

RUBROCUNEOCORIS, NEW GENUS

DIAGNOSIS: Recognized by the head which is concave behind, the single type of dorsal vestiture, the enlarged metafemora, the long second antennal segment, the reddish coloration, the presence of red spots at the apex of the corium and cuneus (occasionally absent in very light specimens), the vesica in the male usually forming a coil, the secondary gonopore subapical, and the apex of the vesica attenuated.

DESCRIPTION: Macropterous male. Small- to medium-sized, range length apex tylus-cuneal fracture 1.35–1.80, range width pronotum 0.75–0.95; dorsal surface smooth, dull to weakly shining, covered with a single type of rather long, recumbent, somewhat shaggy pubescence; anterolateral angles of pronotum with a long erect spine; all femora anteapically with a pair of moderately long semierect spines on dorsal surface and apically with a pair of shorter spines; meso- and meta-femoral trichobothria as in figures 1455 and 1456; all tibiae with scattered, nearly erect spines of varying lengths, some nearly three times as long as tibial diameter; tibiae also with several rows of minute spicules.

Head transverse, concave behind, conforming to anterior pronotal margin in dorsal view; frons and eyes evenly convexly rounded in dorsal view; posterior margin of vertex weakly concave, not elevated, smoothly rounded; clypeus directed posteroventrally, not visible from above; antennae appearing to be inserted on ventral surface of head; eyes rather strongly emarginate at point of antennal insertion, large, reaching to bucculae, genae obsolete; buccal cavity short, rounded, gula obsolete; labium long, reaching onto abdomen; antennal segment one short, pedunculate, segment two long, nearly cylindrical, distinctly longer than width of head, nearly as long as width of pronotum, segments three and four about one-half diameter of segment two, subequal in length; together about equal to length of segment two; pronotum evenly convexly rounded, calli not developed, lateral margins evenly convexly rounded, posterior margin nearly straight; mesoscutum narrowly exposed, separated from scutellum by a finely impressed, nearly straight line; scutellum flat; lateral corial margins weakly convexly rounded; cuneal fracture strongly angled anteromesially, cuneal incisure obsolete; metathoracic scent-gland evaporatory area as in figure 1453; pro- and meso-femora elongate, more or less rectangular, metafemora strongly swollen, ventral surface nearly flat, dorsal surface strongly convex; all tibiae nearly straight and cylindrical; claws rather strongly curved, broadened basally, pulvilli small, parempodia setiform (fig. 1454).

MALE GENITALIA: Vesica relatively long, slender, usually in the form of a single coil or with one complete or nearly complete "loop" (figs. 1461, 1465, 1468), secondary gonopore subapical, well developed, apex of vesica weakly to rather strongly attenuated;

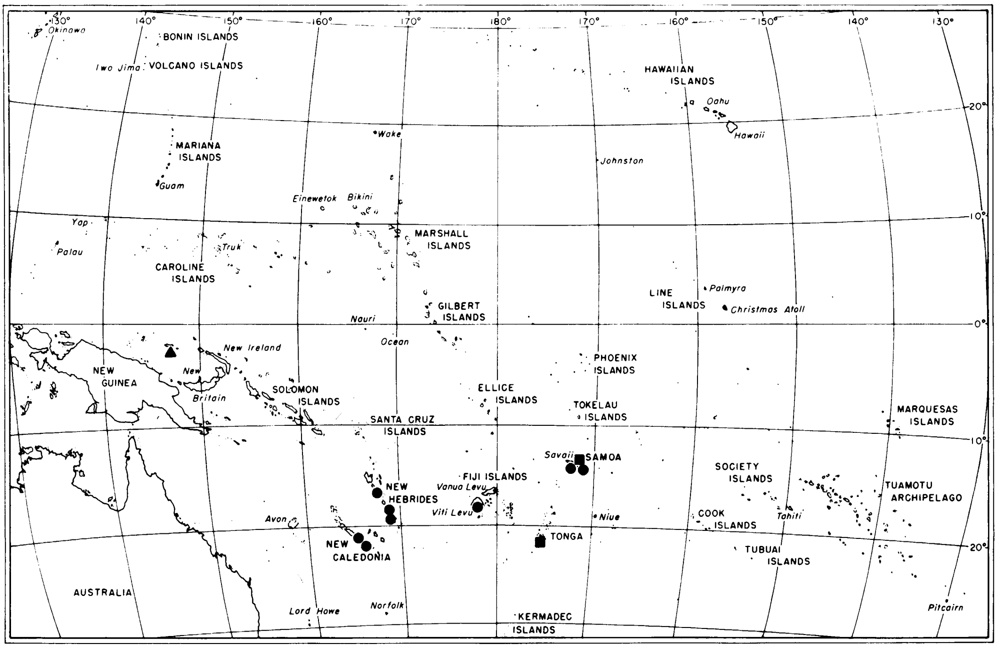


FIG. 1449. Distribution of *Rubrocuneocoris* spp. *R. acuminatus* (●); *R. bifidus* (■); *R. spiculatus* (▲).

phallotheca with a strong right-angle bend, dorsal surface rounded; left paramere boat-shaped, typical phyline form; right paramere small, lanceolate.

FEMALE: Macropterous. Coloration, vestiture, surface texture, and structure similar to male, except eyes slightly smaller and vertex relatively wider; antennal segment two slightly smaller in female than in male.

FEMALE GENITALIA: Posterior wall simple; sclerotized rings with an asymmetrical tube associated with right ring of bursa copulatrix in species examined (see also *Sthenarus myersi*).

TYPE SPECIES: *Rubrocuneocoris acuminatus*, new species.

ETYMOLOGY: Named for the red spotting on the cuneus; masculine.

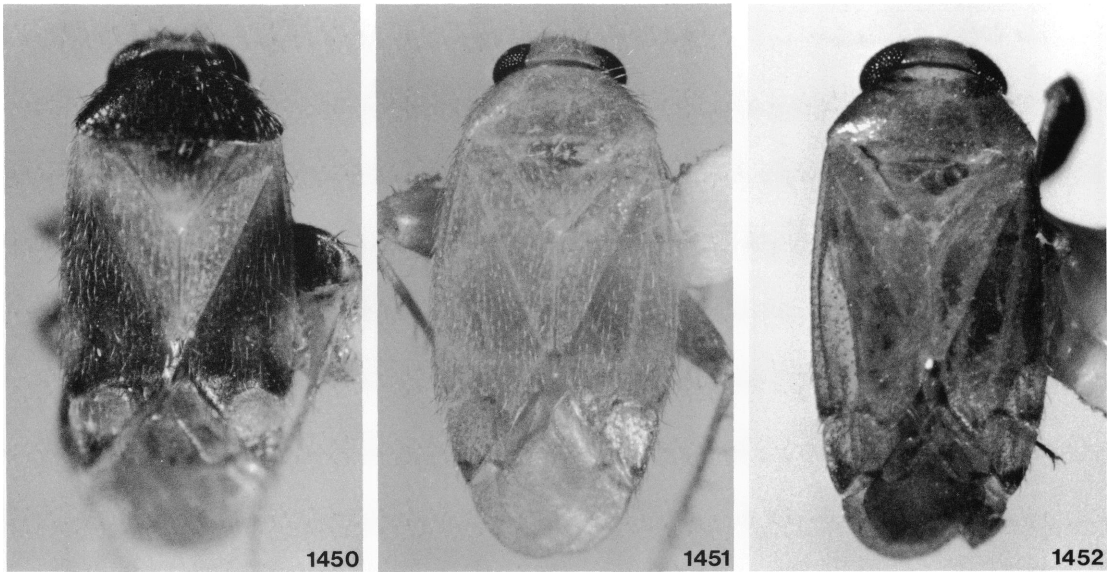
DISTRIBUTION: Figure 1449. Indochina south to New Guinea and New Caledonia and east to Samoa.

DISCUSSION: *Rubrocuneocoris* most closely resembles *Decomioides*. In specimens with very weak red pigmentation the two groups can be confused on the basis of external appearance. The red markings on the cuneus and corium are in the same position as the dark markings found in many *Decomia* species.

ADDITIONAL SPECIMENS: Two males and one female are known from Fiji (Bishop), which resemble one another, and which have the genitalia similar in structure to *acuminatus* but lack the comblike structure subtending the secondary gonopore, and which are totally yellow-white in color, lacking the red spots on the hemelytra generally found in *Rubrocuneocoris*.

A single male from Papua New Guinea, Morobe Province, collected on *Macaranga quadriglandulosa* (Bishop), has genitalia which resemble those of *acuminatus*, although the apical portion of the vesica extends only a short distance past the secondary gonopore.

Eleven male specimens (AMNH, Bishop), probably representing several species have genitalia similar to *acuminatus*, but with the vesica differing in apparently minor details and with some variation in the left paramere. Two males from the Loyalty Islands, Lifou Island (Bishop), may be *acuminatus*. Two additional males from Papua New Guinea (Bishop) have genitalia similar to *spiculatus*.



FIGS. 1450–1452. *Rubrocuneocoris* spp. 1450. *R. acuminatus*, holotype. 1451. *R. bifidus*, holotype. 1452. *R. spiculatus*, holotype.

Fifty-two male specimens (Bishop, AMNH, Queensland), representing either *acuminatus* or *bifidus* are known from Western Samoa and American Samoa. Because most representatives of these two species cannot be positively identified without examination of the male genitalia, I have not identified this long series from the area of sympatry. In addition, 125 female specimens (Queensland, AMNH, Bishop) are known from the area of occurrence of *acuminatus* and *bifidus*, but cannot be positively identified.

Seven female specimens (AMNH, Bishop) are known from New Guinea. Nine additional females (AMNH, Bishop, BMNH) which may represent species of *Rubrocuneocoris* are known from Peninsular Malaya, New Guinea, the Solomon Islands, Northern Borneo, and the Philippine Islands.

Rubrocuneocoris acuminatus, new species

Figures 1449, 1450, 1457–1463

DIAGNOSIS: Recognized by the variable coloration of the dorsum and metafemora and the structure of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.59 (1.35–1.80), width pronotum 0.88 (0.75–0.95); coloration from very pale yellow-white with deep red eyes and bright reddish marking marginally on cuneus and apex of corium laterally, to almost deep red on pronotum, corium, metafemora, thoracic pleuron, and abdomen.

Surface texture, vestiture, and structure as in generic description.

MALE GENITALIA: Figures 1461–1463. Vesica forming a complete coil, apex long and acuminate, secondary gonopore subtended distally by a notched, sclerotized bar.

FEMALE: See generic description.

FEMALE GENITALIA: See generic description.

MEASUREMENTS: See Appendix.

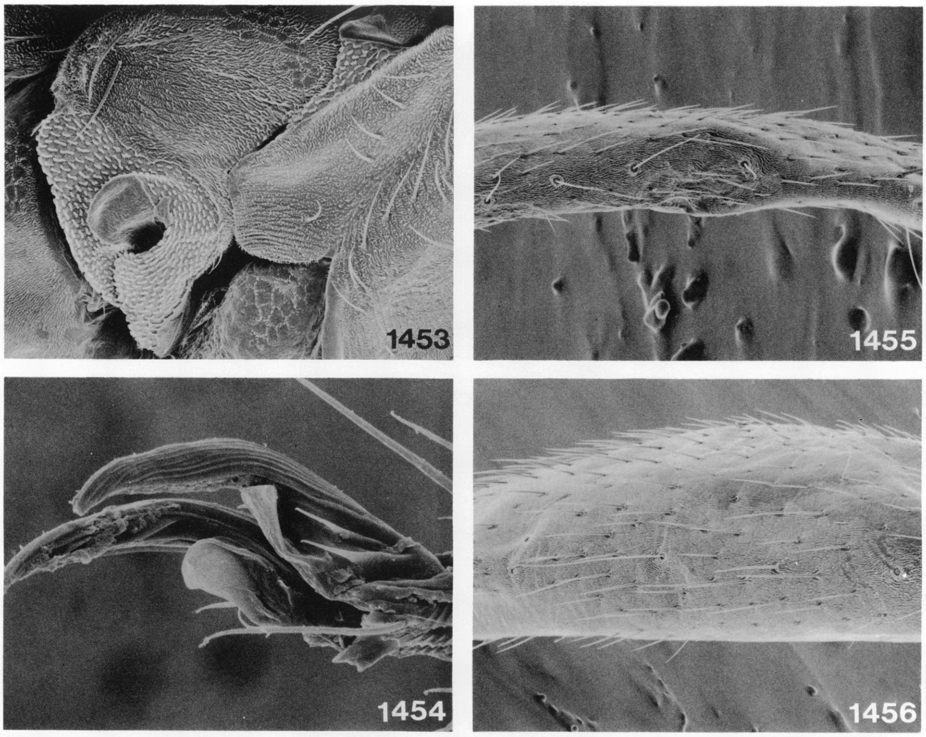
ETYMOLOGY: Named for the elongate, spinelike apex of the vesica.

DISTRIBUTION: Figure 1449. New Caledonia east to Samoa.

HOLOTYPE ♂: FIJI: *Viti Levu:* Nausori Highlands, 500–700 m., March 26, 1980, N. L. H. Krauss collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 8 ♂♂.

FIJI: *Moala Island:* July 13, 1924 (Bryan; Bishop), 1♂; Ovalau, Levu Ka, 0–200 m., December 1969 and February 1972 (Krauss;



FIGS. 1453–1456. *Rubrocuneocoris* sp. prob. *bifidus.* 1453. Lateral view of metathorax showing scent-gland evaporatory area. 1454. Pretarsus. 1455. Mesofemur, showing trichobothria. 1456. Metafemur, showing trichobothria.

Bishop), 2♂♂; Ovalau, Cape Horn, 0–20 m., December 30, 1969 (Krauss; Bishop), 1♂. *Viti Levu:* Dobnilevu, November 1950 (Krauss; Bishop), 1♂; Nandarivatu, 2700 feet, September 15, 1938, at light (Zimmerman; Bishop), 2♂♂; Raki Raki, March 1951 and January 1955 (Krauss; Bishop), 2♂♂; Rewa, April 1906 (Muir; Bishop), 1♂; Suva, September 1950 (Krauss; Bishop), 3♂♂.

NEW CALEDONIA: Anse Vata, October 25, 1958 (Joyce; Bishop), 1♂; Noumea, May 1950 and February 20, 1963 (Krauss; AMNH, Bishop), 2♂♂; Poindimie, July 1950 (Krauss; Bishop), 1♂; Poindimie, 0–50 m., January, 1969 (Krauss; Bishop), 1♂; Pouebo, 20 m., January 16, 1964, light trap (Straatman; Bishop), 1♂.

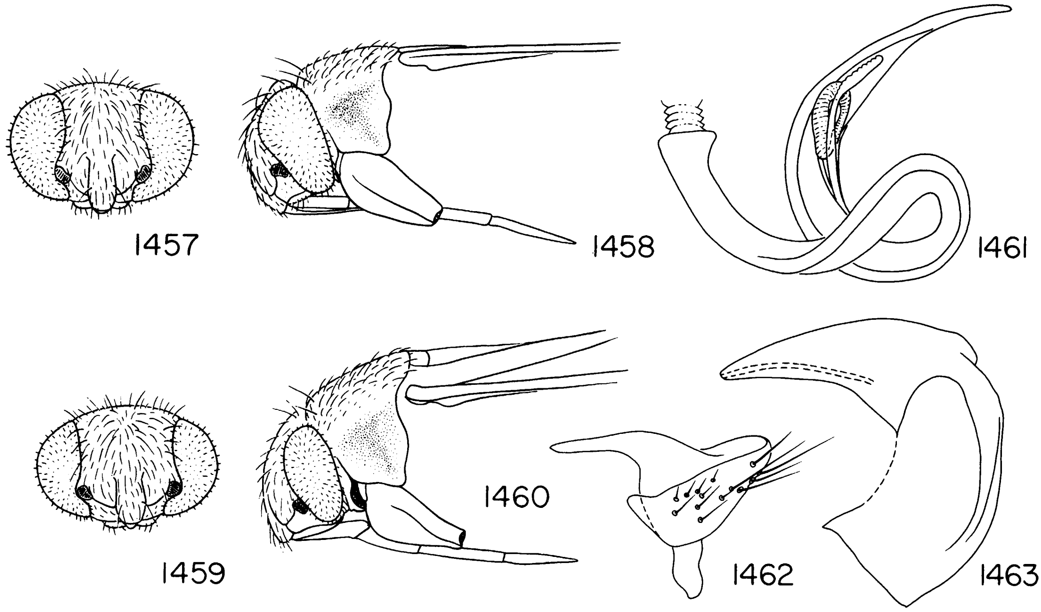
NEW HEBRIDES: *Efate Island:* (NW) Maat, Mat, Ambryn Village, 3 m., August 15–18, 1957 (Gressitt; Bishop), 3♂♂; (NW) Limestone Plateau N of Maat, 100 m., August 21, 1957, light trap in clearing (Gressitt; Bishop), 1♂; Sivivi, 50 m., February 27, 1970 (Krauss; Bishop), 2♂♂; Vila, 0–100 m., February 1970 (Krauss; AMNH, Bishop), 3♂♂. *Eromonga Island:* Numpon, 250 m., March 1, 1964, light trap (Straatman; Bishop), 1♂; [no data], July 1930 (Cheesman; BMNH), 1♂. *Espiritu Santo Island:* (SW) Namatasopa, 300 m., August 29, 1957, light trap (Gressitt; Bishop), 5♂♂; [no data] August 1929 (Cheesman; BMNH), 2♂♂; Segond Channel, August 1950 (Krauss; Bishop), 2♂♂.

SAMOA: *Tutuila Island:* Naval Station, August 10–27, 1940, at light (Swezey and Zimmerman; Bishop), 4♂♂; Pago Pago, October 14, 1964 (Spence; Bishop), 1♂; Taputimu, June 29, 1964 (Spencer; Bishop), 1♂. *Upolu Island:* Afiamalu, June 10–July 10, 1940, 2200–2800 feet, at light (Swezey and Zimmerman; AMNH, Bishop), 9♂♂.

Rubrocuneocoris bifidus, new species

Figures 1449, 1451, 1453–1456, 1464–1467

DIAGNOSIS: Recognized by the generally pale coloration, with the sometimes reddish



FIGS. 1457–1463. *Rubrocuneocoris acuminatus*. 1457. Frontal view of head, ♂. 1458. Lateral view of head and prothorax, ♂. 1459. Frontal view of head, ♀. 1460. Lateral view of head and prothorax, ♀. 1461. Vesica. 1462. Left paramere. 1463. Phallotheca.

metafemora and the structure of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.63 (1.42–1.72), width pronotum 0.88 (0.82–0.90); coloration generally pale yellow-white, eyes deep red, metafemora sometimes reddish, cuneus with bright red markings basally and apically, corium usually reddish apically on lateral margin, parts of veins of membrane red.

Surface texture, vestiture, and structure as in generic description.

MALE GENITALIA: Figures 1464–1467. Vesica forming a complete large coil, apex in the form of a short tapering projection or an arrowhead-shaped projection.

FEMALE: Not positively identified.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the bifid nature of the apex of the vesica.

DISTRIBUTION: Figure 1449. Tonga Islands, Samoa.

HOLOTYPE ♂: TONGA ISLANDS: Eua, Hafu, 100–200 m., February 1972, N. L. H. Krauss collector; deposited in B. P. Bishop Museum, Honolulu.

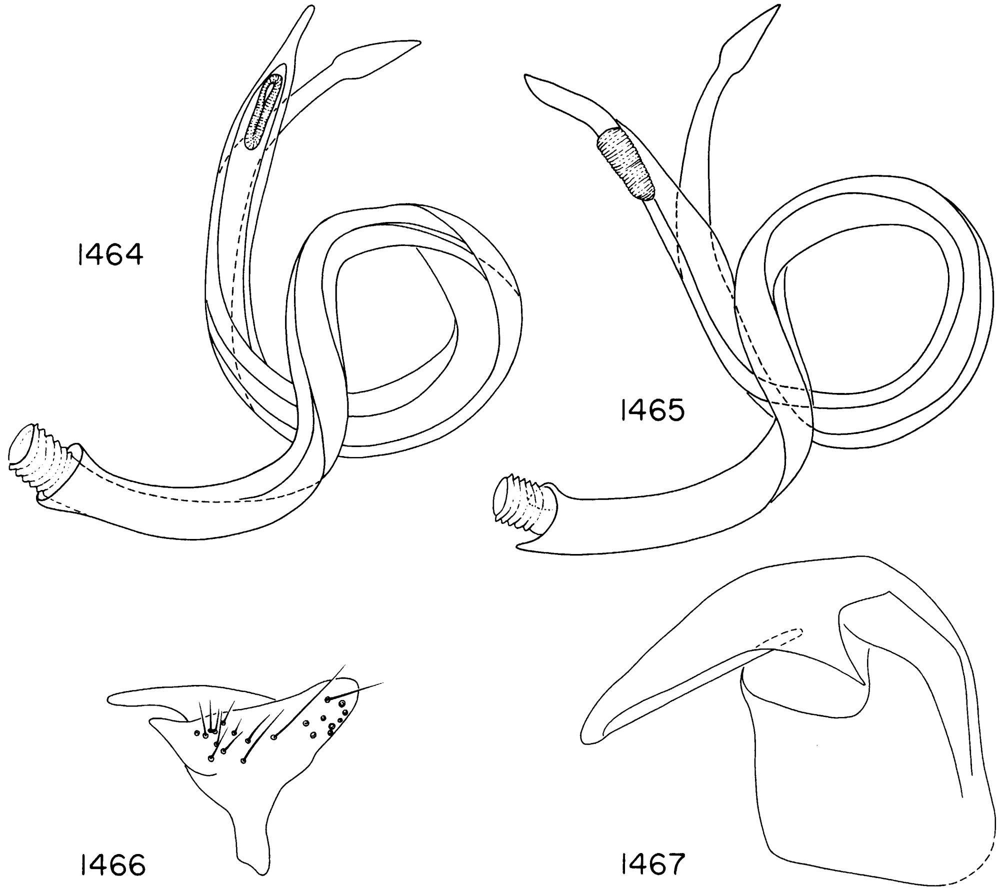
PARATYPES: Same data as holotype (Bishop), 2♂♂.

SAMOA: *Tutuila:* Naval Station, August 24, 1940, at light (Swezey and Zimmerman; Bishop), 1♂; Upolu, Apia, February 1955 (Krauss; Bishop), 1♂. TONGA ISLANDS: *Eua:* Hafu, 100–200 m., February 1972 (Krauss; Bishop), 1♂; Pangoi, 0–100 m., February 1972 (Krauss; Bishop), 1♂. *Tongatapu:* Nukualofa, 0–50 m., March 1969 (Krauss; AMNH, Bishop), 4♂♂; Nukualofa, 0–100 m., November 1969 (Krauss; AMNH, Biship), 2♂♂; Hanmonga, February 1956 (Krauss; Bishop), 2♂♂; Vavua, Neiafu, 0–100 m., November 1969 (Krauss; Bishop), 2♂♂.

Rubrocuneocoris spiculatus,
new species
Figures 1449, 1452, 1468–1470

DIAGNOSIS: Recognized by the dirty yellow coloration of the dorsum and the structure of the male genitalia.

DESCRIPTION: Macropterous male. Length apex tylus-cuneal fracture 1.55, width pronotum 0.80; coloration of dorsum dirty yellow,



FIGS. 1464–1467. *Rubrocuneocoris bifidus.* 1464. Vesica. 1465. Vesica. 1466. Left paramere. 1467. Phallotheca.

thorax and abdomen laterally deep red, metafemora mostly reddish; eyes very dark; cuneus basally and apically, corium adjacent to cuneus, and some of veins of membrane bright red.

Surface texture, vestiture, and structure as in generic description.

MALE GENITALIA: Figures 1468–1470. Vesica long, strongly bent, secondary gonopore subtended by a few spicules, apex short.

FEMALE: See generic description.

FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

ETYMOLOGY: Named for the spicules on the vesica subtending the secondary gonopore.

DISTRIBUTION: Figure 1449. Bismarck Archipelago.

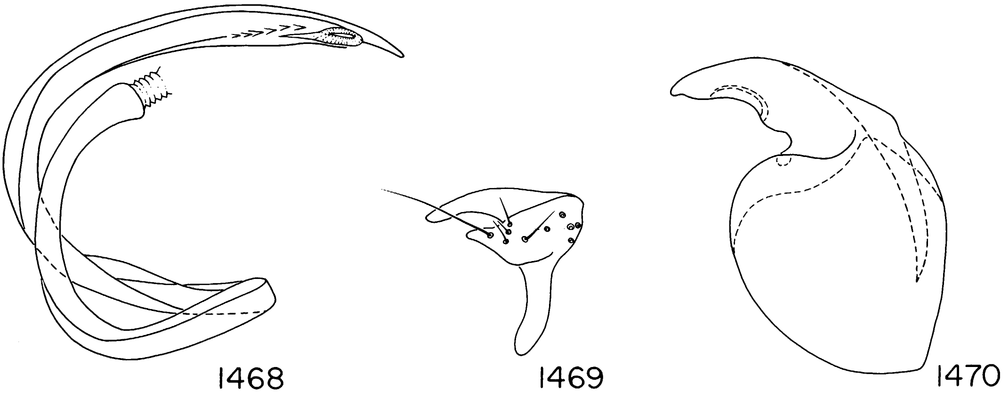
HOLOTYPE ♂: PAPUA NEW GUINEA: *Manus Prov.:* Manus Island, Rossum, 6 km. SE of Lorengau, 180 m., December 23, 1959, T. C. Maa collector; deposited in the B. P. Bishop Museum, Honolulu.

PARATYPES: Same data as holotype (AMNH, Bishop), 2♂♂, 3♀♀.

SPANAGONICUS BERG

Spanagonicus Berg, 1883, p. 78.

DIAGNOSIS: Recognized by the nearly black body and femora with a white transverse fascia on the hemelytra and white markings at the apex of the corium, the head which is weakly exserted and not concave behind, and the antennae which have a relatively short second segment and are strongly sexually dimorphic, segments one and two being much



FIGS. 1468–1470. *Rubrocuneocoris spiculatus*. 1468. Vesica. 1469. Left paramere. 1470. Phallotheca.

larger in the males than in the females. The females are often brachypterous. The male genitalia in *albofasciatus* are as in figures 1475–1477.

DISTRIBUTION: In the study area, known from the Hawaiian Islands. Also recorded from North, Central, and South America.

DISCUSSION: *Spanagonicus* includes only two described species *albofasciatus* Reuter and *provincialis* Berg. Its relationships to other phyline genera are not well understood.

Spanagonicus albofasciatus Reuter
Figures 1471–1477

Spanagonicus albofasciatus Reuter, 1907, p. 24.

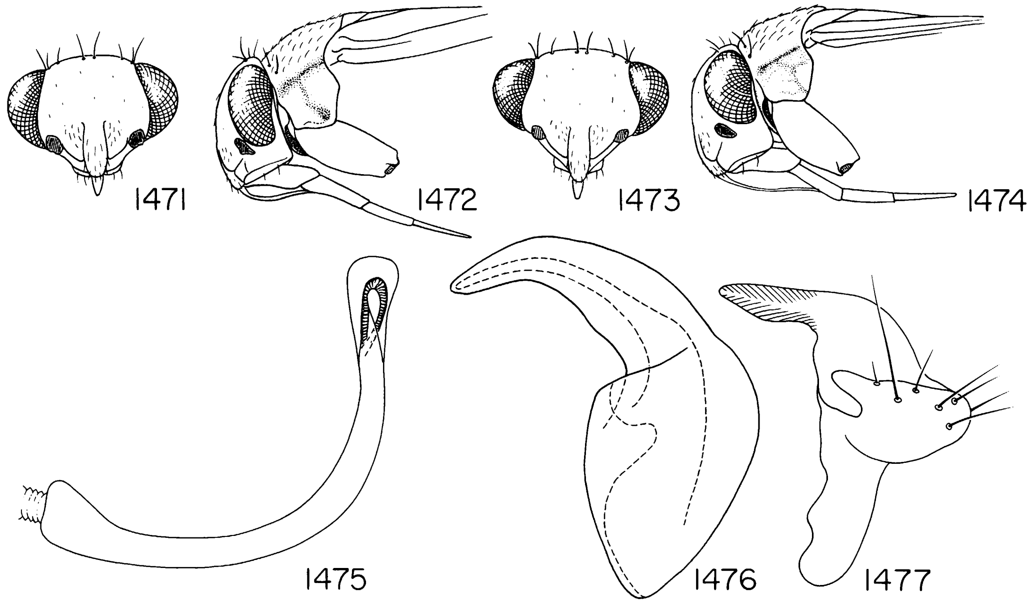
DIAGNOSIS: Recognized by the characters given in the generic diagnosis.

MALE GENITALIA: Figures 1475–1477.

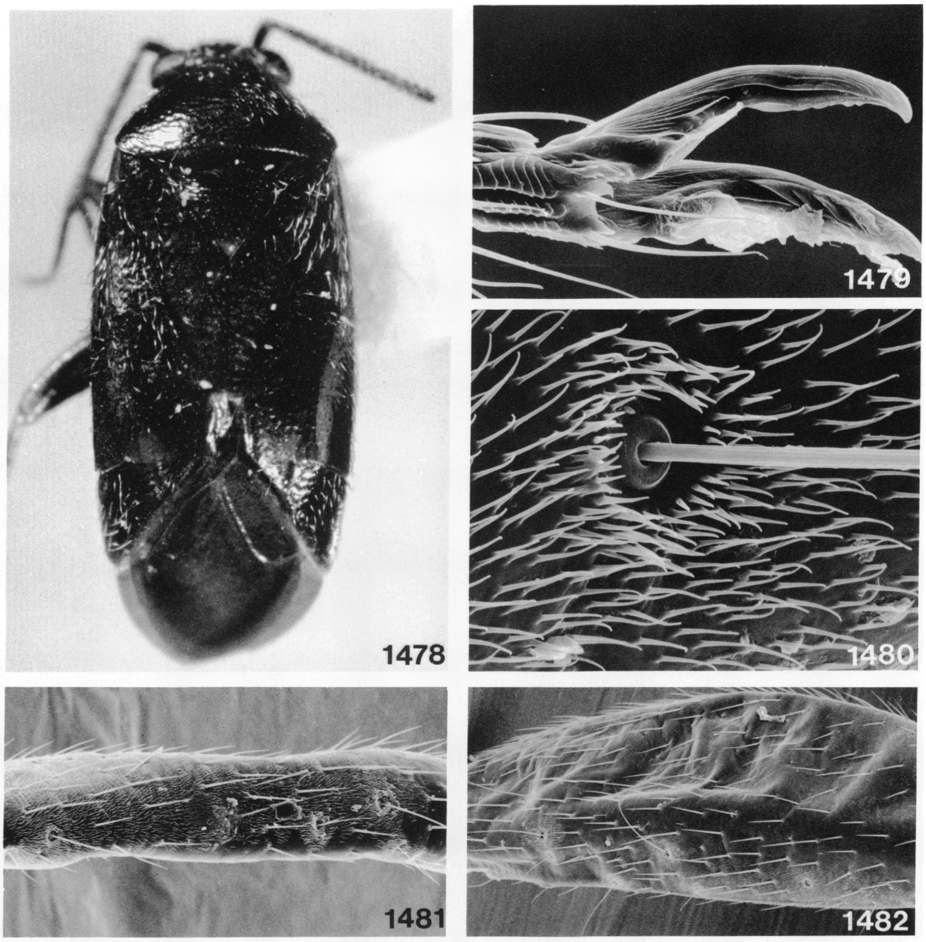
FEMALE GENITALIA: Not examined.

MEASUREMENTS: See Appendix.

DISTRIBUTION: In the study area, known only from the Hawaiian Islands. Specimens



FIGS. 1471–1477. *Spanagonicus albofasciatus*. 1471. Frontal view of head, ♂. 1472. Lateral view of head and prothorax, ♂. 1473. Frontal view of head, ♀. 1474. Lateral view of head and prothorax, ♀. 1475. Vesica. 1476. Phallotheca. 1477. Left paramere.

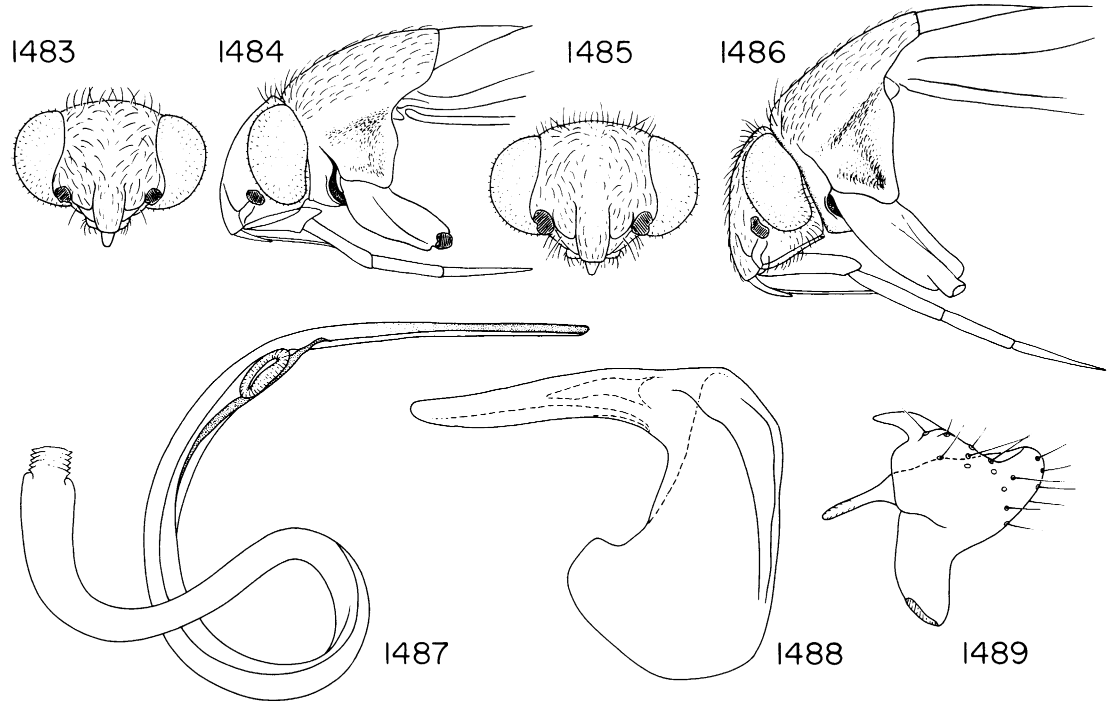


FIGS. 1478–1482. *Sthenarus myersi.* 1478. Dorsal view, ♂, New Zealand, SL, Waimatua. 1479. Pretarsus. 1480. Detail of trichobothrium of mesoleg. 1481. Mesofemur, showing trichobothria. 1482. Metafemur, showing trichobothria.

examined from Hawaii, Kahoolawe, Kauai, and Oahu; recorded from Maui and Molokai by Zimmerman (1948). Also widely distributed in the United States and West Indies.

SPECIMENS EXAMINED: HAWAIIAN ISLANDS: *Hawaii:* Kilauea, July 4, 1934, on grass (Swezey; Bishop), 1♂; Kilauea, October 19, 1929 (Swezey; Bishop), 1♂; Hilo, July 25, 1921 (Swezey; Bishop), 2♂♂, 1♀; Hookomo [?], August 9, 1935 (Usinger; Bishop), 1♂; 1 mi. N of Humuula, July 7–30, 1935 (Usinger; Bishop), 1♂, 6♀♀; Mauna Kea Summit, south slope, August 10–11, 1935 (Usinger; Bishop), 2♀♀. *Kahoolawe:* east end, 900 feet, ex *Sida* sp., February 14, 1931 (Bryan; Bishop), 1♀. *Kauai:* Barking Sands, December 31, 1935 (Usinger; Bishop), 1♀; Kekaha Point, August 10, 1909 (Bishop), 1♂, 1♀; Kokee, August 23, 1921, August 4–6, 1961 (Swezey, Maa, Miyatake, Yoshimoto; Bishop), 1♂. *Oahu:* Ewa, June 25, 1920 (Swezey; Bishop), 1♀; Honolulu, August, 1917, June 28, 1921, February 10, 1960 (Bridwell, Clogg; Bishop), 6♂♂, 3♀♀; Kahaluu, July 4, 1935 (Usinger; Bishop), 1♂; Kalihi, May 14, 1958 (Suehiro; Bishop), 1♂; Koko Head, March 15, 1936 (Usinger; Bishop), 2♂♂; Makaha, March 24, 1921 (Bishop), 1♀; Waialde, May 14, 1907 (Bishop), 1♀; Waimanalo, March 3, 1921 (Swezey; Bishop), 2♂♂.

DISCUSSION: Recorded by Zimmerman (1948) as having been first seen in Hawaii in 1909. Breeds there on beets, bermuda grass,



FIGS. 1483–1489. *Sthenarus myersi*. 1483. Frontal view of head, ♂. 1484. Lateral view of head and prothorax, ♂. 1485. Frontal view of head, ♀. 1486. Lateral view of head and prothorax, ♀. 1487. Vesica. 1488. Phallotheca. 1489. Left paramere.

carrot, chinese cabbage, corn, pigeon peas, *Portulaca*, nightshade, and swiss chard (Zimmerman, 1948). The conspicuous antennal dimorphism makes the males of this species particularly easy to recognize.

STHENARUS FIEBER

Sthenarus myersi Woodward

Figures 1478–1489

Sthenarus myersi Woodward, 1950, p. 22.

DIAGNOSIS: Recognized by the weakly rugulose dorsum (especially pronotum), dorsum with only recumbent, woolly, sericeous pubescence, the coloration from ochre to black, sometimes mixed, with the cuneus often reddish, and the form of the genitalia, the vesica of the male with a complete coil and an elongate apex, the phallotheca with a long tubular spine (figs. 1487–1489), and the female with a well-developed lateral tube also found in *Beamerella* Knight and *Hambletoniola* Carvalho (see Henry and Schuh, 1979). The parempodia are setiform, the pulvilli small and flaplike (fig. 1479). In some specimens there is a weak longitudinal median keel on the posterior surface of the genital capsule.

MALE GENITALIA: Figures 1487–1489.

FEMALE GENITALIA: Not illustrated.

MEASUREMENTS: See Appendix.

DISTRIBUTION: New Zealand.

SPECIMENS EXAMINED: 40♂♂ and 52♀♀ widely distributed in New Zealand.

DISCUSSION: Woodward (1950) placed *myersi* in the primarily holarctic genus *Sthenarus* Fieber. He gave no indication of which characters determined that placement. The general appearance of *myersi* is similar to that of *Sthenarus dissimilis* Reuter and the structure of the vesica is not dissimilar to that of several species placed in *Sthenarus* and its sometime subgenus *Phoenicocoris* Reuter. The female genitalia of those groups have not been studied. The female genitalia of *myersi* resemble those of *Beamerella* Knight and *Hambletoniola* Carvalho as well as certain other phylines as noted by Henry and Schuh (1979). Only further revisionary work will determine the validity of assigning *myersi* to *Sthenarus*. The distributional pattern of *Sthenarus* with *myersi* included is unusual. It is one of only two described Phylinae recorded from the larger islands of New Zealand, and has been recorded as occurring on a number of plants, including *Astelia, Carmichaelia, Coprosma baueri, Geniostoma, Hymanthera, Muehlenbeckia australis, Nothofagus cliffortoides,* and *Phormium.*

PHYLOGENETIC ANALYSIS

In a previous paper (Schuh, 1974), I attempted to lay the groundwork for a phylogenetic classification of the Phylinae. This involved not only the recognition of a monophyletic group at the subfamily level, but also the formation of four tribal level groupings, one of which, the Leucophoropterini, was new. I made no attempt to explore phylogenetic relations below the tribal level. Because some of the conclusions in my earlier work were in part influenced by examination of material from the Indo-Pacific, and because I have now had the opportunity to study that material in detail, it seems appropriate to incorporate the new information into the previous scheme, and to prepare a more detailed analysis where possible.

As will be seen, not all groups can be treated in equal detail, and some recognized generic and tribal level groupings are almost certainly not monophyletic. Also, the detailed aspect of the analysis is restricted to the taxa specifically examined for this study. I have taken this approach in part as a way of limiting the scope of this study, and in part because the phyline fauna of much of the rest of the world is too poorly known to integrate into the analysis.

I have made every attempt to discover and present defining characters of taxa in their diagnoses. I also present in table 2 a matrix of character descriptions and distributions at the generic level for the taxa under consideration. Most genera form rather homogeneous groups and are therefore treated as units. Some, however, show considerable heterogeneity for a variety of characters. In a few cases this certainly results from the fact that they are not monophyletic groups. Table 2 includes abbreviations and numerical codes referring to the included taxa. Table 3 will serve as a key to those codes.

The characters listed in table 2 have been grouped in the order that the information appears in the descriptions. Some characters in the matrix which vary for only a single species in one or a few genera have this variation described immediately under the description of the character. Although I made an intensive search for autapomorphies for all terminal taxa, in certain cases I have been able to establish none. Therefore, in some instances, terminal taxa are shown to possess no unique defining characters, being recognized only by a combination of characters; in others apparent defining characters exhibit some homoplasy as described. Two taxa, *Badezorus tyrianus* and *Psallus rubromaculosus* have no single character or combination of characters in table 2 which define them and they are therefore not included in the cladograms. The diagrams presented in figures 1490–1499 represent one possible scheme of relationships for the taxa included in table 2. The trees have been prepared without the benefit of a computer, and as such do not represent a definitive attempt to arrive at a most parsimonious solution. Those cases where rearrangements allow for shorter trees are discussed below, with reasons for why the trees in the illustrations were chosen for presentation. In figures 1490–1499 nonhomoplasious characters are indicated by standard numerals, parallelisms by italics, and reversal by underlined italics. *Ragmus flavomaculatus, Ragmus pellucidus,* and *Ragmus srilankensis* are not included in the analysis.

The monophyly of the Phylinae is established on the basis of the structure of the male genitalia as indicated by character 67 and 70-2 in figure 1490. I recognize the same tribal-level groupings as I did in my previous paper (Schuh, 1974), with the addition of one new group, the Auricillocorini. I previously suggested a scheme of interrelationships for the tribes. As is seen in figure 1490, that arrangement appears not to be supported by the characters in table 2, except that the Pilophorini appear as the sister group of all other Phylinae. One group, the Phylini, is paraphyletic, simply consisting of taxa which fall in no other tribe. The following discussion deals with the tribes in the order in which they appear in the text above.

PILOPHORINI

This is a conspicuously monophyletic group, recognized by the possession of sev-

TABLE 2
Characters for Indo-Pacific Phylinae

TAXON CODE (see Table 3)	123456789	1111111111	2222222222	3333333333	4444444444	5555555555	6666666666	7777777
		0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456
COLORATION								
1 1) Hemelytra without anterior fascia, or fascia extending onto both corium and clavus; 2) clavus with a narrow light fascia just posterior to scutellum [Some variability in *Acrorrhinium*]	111111111	1111222121	1111111111	1111111111	1111111111	1111111111	1111111111	1111111
2 1) Corium without a macula adjacent to cuneal fracture; 2) corium with a white macula adjacent to cuneal fracture [Except *Hallodapus luridus* with 1; indistinct in *Sohenus uvarovi*]	111111111	1111111112	1212111111	1111111111	1111111111	1111111111	1111111111	1111111
3 1) Corium without a fascia at about level of apex of scutellum; 2) corium and sometimes including clavus with a white, contrasting fascia at level of apex of scutellum [Fascia not present in all *Hallodapus* spp.; fascia present in *Decomioides philippinensis*]	111111111	1111111112	1212112111	1111111112	1222212222	1111111111	1111111111	1111111
4 1) Cuneus unicolorous or nearly so, either light or dark, sometimes mottled, or with darker spots; 2) cuneus light basally, contrasting with remaining dark coloration [Cuneus unicolorous in *Gulacapsus moresbyana*, *G. novoguinensis*, *Pseudoleucophoroptera promeceops*, and *Trichocephalocapsus immaculatus*]	111111111	1111111111	1111112221	1222111212	2222222222	1111111111	1111111111	1111111
5 1) Cuneus without a distinct red spot posteriorly; 2) cuneus with a distinct red spot at apex Except red spot absent in *Malaysiamiroides mirabilis*]	111111111	1111111111	1111111111	1111111111	1111111111	1111111111	1111111211	1112111
6 1) Membrane unicolorous; 2) membrane dark basally and light apically	111111111	1111111111	1111111111	1111111111	1111111112	1111111111	1111111111	1111111
SURFACE TEXTURE								
7 1) Dorsum generally smooth or only very weakly rugulose, pronotum sometimes more strongly so; 2) dorsum distinctly rugulose, including pronotum and hemelytra	111111111	1111111111	1111111111	1111111111	1111111111	1111111111	1111211111	1111111
8 1) Head, pronotum and scutellum dull or very weakly shining; 2) head, pronotum, and scutellum highly polished and shining [Except *Cleotomiris borneoensis* with 1]	111111111	1111221111	1121111111	1111111112	2222221111	1111111111	1111111111	1111111
9 1) Corium and cuneus of same surface texture, sometimes polished and shining; 2) corium dull, cuneus highly polished and shining in contrast to corium	111111111	1111211111	1111111111	1111111111	1111111111	1111111111	1111111111	1111111
10 1) Hemelytra opaque; 2) hemelytra at least partly hyaline and translucent	111111111	1111111111	1111111111	1111111111	1111111111	1111111122	2212111122	1121111
11 1) Hemelytra impunctate; 2) hemelytra distinctly punctured [Hemelytra weakly punctured in *Sejanus fijiensis*]	111111111	1111111111	1111111111	1111111112	2122221111	1111111111	1111111111	1111111
12 1) Corium and clavus dull or weakly shining, or sometimes hyaline; 2) corium and clavus highly polished and shining but not hyaline	111111111	1111111111	1121111111	1111111112	1111111111	1111111111	1111111111	1111111

TABLE 2—(*Continued*)

	123456789	1111111111 0123456789	2222222222 0123456789	3333333333 0123456789	4444444444 0123456789	5555555555 0123456789	6666666666 0123456789	7777777 0123456
VESTITURE								
13 1) Vestiture of dorsum with flattened, dull, scale-like setae with longitudinal striations; 2) vestiture of dorsum of suberect, simple setae and sometimes also recumbent, woolly or white appressed flattened setae; 3) vestiture of dorsum always with some flattened, lanceolate, sericeous setae	333333333	3333222222	2222222222	2222222222	3222222222	2222222222	2222222222	2221222
14 1)Setae of dorsum variable but never with transverse notches; 2) setae of dorsum appressed, flattened, and with transverse notches	111111111	1111111111	1111121111	1111111111	1111111111	1111111111	1111111111	111111
15 1) Head and genae without heavy, erect, dark setae; 2) head and or genae densely covered with heavy, erect, dark setae	121111111	1111111111	1111111111	1111111111	1111121112	1111111111	1111111111	111111
16 1) Scutellum without patches of scale-like setae; 2) scutellum with patches of scale-like setae laterally and sometimes posteriorly	111111122	2222111111	1111111111	1111111111	1111111111	1111111111	1111111111	111111
17 1) If lanceolate, sericeous, appressed setae present on hemelytra then scattered; 2) lanceolate, sericeous, apppressed setae on hemelytra arranged in two transverse bands	122211122	2221111111	1111111111	1111111111	1111111111	1111111111	1111111111	111111
18 1) Hemelytral setae simple and at most suberect or sometimes appressed, flattened, possibly scale-like and shining; 2) at least some hemelytral setae weakly to strongly lanceolate and erect	111111111	1111111111	1111111111	1111111111	1211211111	1111111111	1111111111	111111
19 1) If thoracic pleuron with lanceolate setae, then generally distributed, scattered; 2) lanceolate setae on thoracic pleuron aggregated in a patch on metepimeron	111111122	2222111111	1111111111	1111111111	1111111111	1111111111	1111111111	111111
20 1) Sericeous setae, if present on hemelytra, not arranged in an arc just posterior to scutellum and appearing as a transverse fascia; 2) hemelytra always with a fascia-like arc of sericeous, appressed setae just posterior to scutellum	111111111	1111111111	1111111111	1111111111	2111111111	1111111111	1111111111	111111
21 1) Metafemur without a row of dark tiny spicules on distal half of dorsal surface; 2) metafemur with a row of tiny dark spicules on distal half of dorsal surface	111111111	1111111111	1111111111	1111111111	1111111111	1222222211	1111111111	1112111
22 1) Metafemora without a fringe of erect setae ventrally; 2) metafemora with a fringe of erect setae ventrally	111111111	1111111111	1111111111	1111111111	1111112222	1111111111	1111111111	1111111
HEAD AND ANTENNAE								
23 1) Head concave behind, at least partially obscuring anterior margin of pronotum or head weakly exserted, obscuring at most only part of anterior margin of pronotum, with eyes at most slightly removed from pronotum; 2) head strongly exserted, eyes distinctly removed from anterior pronotal margin. [Some variability in Acrorrhinium spp., but eyes commonly contiguous with pronotum]	111211111	1111111112	1112111111	1111111111	1111111112	1111111111	1111111111	1111111

TABLE 2—(*Continued*)

	123456789	1111111111 0123456789	2222222222 0123456789	3333333333 0123456789	4444444444 0123456789	5555555555 0123456789	6666666666 0123456789	7777777 0123456
24 1) Vertex declining anteriorly, head strongly hypognathus, clypeus at most only partially visible from above and never prominent; 2) vertex nearly horizontal longitudinally, head usually appearing prognathus, clypeus visible from above and usually prominent	111111111	1111111122	2222211111	1111111111	1111111111	1111111111	1111111111	1111111
25 1) Eyes occupying more than two-thirds of height of head; 2) face elongate below eyes, eyes occupying less than two-thirds of height of head. [Some variability in Sejanus spp.; except Pseudoleucophoroptera mamai with 2]	122211122	2222111112	1112111111	1111111111	1111112222	1111111111	1111111111	1111111
26 1) Frons simple; 2) frons spiniform	111111111	1111111121	1111111111	1111111111	1111111111	1111111111	1111111111	1111111
27 1) Gula flat or nearly so; 2) gula compressed laterally and keel-like	111111111	1111111111	1111111111	1111111111	1111112111	1111111111	1111111111	1111111
28 1) Antennal segment one elongate, strongly flattened and leaf-like; 2) antennal segment one more or less cylindrical, coke-bottle shaped, length variable, but always distinctly greater than diameter; 3) antennal segment one very short, broadened distally, cup-like	222232222	2222222222	1222222222	2222222222	2222222222	2222222222	2222222222	2222222
29 1) Antennal segment two slender, although sometimes increasing in diameter distally; 2) antennal segment two thickened, terete or box-like	111121111	1111111111	1111111111	1111111111	1111111111	1111111211	1111121111	1111111
30 1) Antennal segment two straight; 2) antennal segment two curving	122111122	2222222111	1111121111	1111111112	2222222222	1111111111	1111111111	1111111
31 1) Antennal segments three and four slender, linear; 2) antennal segments three and four weakly to strongly terete	111111111	1111121111	1111111111	1111111111	1211111111	1111111111	1111111111	1111111
THORAX								
32 1) Posterior pronotal lobe not elevated or swollen; 2) posterior pronotal lobe elevated and swollen	122211122	2221222222	2222211111	1111111112	2222222212	1111111111	1111111111	1111111
33 1) Anterior pronotal lobe narrowed, more or less parallel-sided and distinct from posterior lobe; 2) anterior and posterior pronotal lobes not demarcated; 3) pronotum constricted mesially, often distinctly neck-like, sometimes hour-glass shaped, anterior and posterior lobes distinctly separated	233322222	2222222222	2212222222	2222222222	1222232222	2222222222	2222222222	2222222
34 1) Anterior pronotal margin finely reflexed, not in the form of a flattened collar; 2) anterior pronotal margin in the form of a collar, often relatively narrow, depressed, and sometimes weakly reflexed anteriorly; 3) pronotum with broad, flattened anterior collar, never depressed or reflexed anteriorly	111111111	1111222233	3333311111	1111111112	2222222213	1111111111	1111111111	1111111
35 1) Pronotum without conical tubercles; 2) pronotum with a pair of conical tubercles on anterior lobe	111211111	1111111111	1111111111	1111111111	1111111111	1111111111	1111111111	1111111

TABLE 2—(*Continued*)

	123456789	1111111111 0123456789	2222222222 0123456789	3333333333 0123456789	4444444444 0123456789	5555555555 0123456789	6666666666 0123456789	7777777 0123456
36 1) Humeral angles of pronotum not elevated; 2) humeral angles of pronotum shoulder-like	111111111	1111111111	1111111111	1111111111	1121111111	1111111111	1111111111	1111111
37 1) Pronotum not carinate laterally; 2) pronotum carinate laterally	111111111	1111111111	1111111111	1111111111	1211111111	1111111111	1111111111	1111111
38 1) Prosternal xyphus not projecting ventrally; 2) prosternal xyphus projecting ventrally	111111111	1111111111	2111111111	1111111111	1111111111	1111111111	1111111111	1111111
39 1) Mesoscutum exposed; 2) mesoscutum covered by pronotum	111111111	1111222111	1111111111	1111111112	2222221111	1111111111	1111111111	1111111
40 1) Metathoracic scent-gland evaporatory area not protruding laterally; 2) evaporatory area slightly protruding laterally; 3) evaporatory area strongly protruding laterally	111111111	1111323222	2223111111	1111111112	2232212222	1111111111	1111111111	1111111
HEMELYTRA								
41 1) Hemelytra transversely rounded, at least somewhat declining laterally; 2) hemelytra flat, not declining laterally	111111111	1111111111	1111111111	1111111111	2222221111	1111111111	1111111111	1111111
42 1) Lateral corial margins convex or nearly straight; 2) lateral corial margins weakly sinuous; 3) lateral corial margins strongly sinuous [Some variability in Acrorrhinium spp; except Clapmarius kalabakan with 2]	132311122	2222323222	1122112111	1111111112	3223232222	1111111111	1111111111	1111111
43 1) Exocorium present over entire length of corium costa not completely obscured in dorsal view; 2) exocorium greatly reduced on anterior one-half of corium, costa obscured in dorsal view	111111112	1121212111	1111111111	1111111111	2112121111	1111111111	1111111111	1111111
44 1) Clavus flat along commissure; 2) Clavus elevated along commissure	111111111	1111211111	1111111111	1111111111	1111111111	1111111111	1111111111	1111111
45 1) Corium and clavus not swollen adjacent to cuneal fracture; 2) corium and cuneus swollen adjacent to cuneal fracture	111111111	1111111111	1111111111	1111111111	2222221111	1111111111	1111111111	1111111
46 1) Cuneal incisure shallow to deep; 2) cuneal incisure obsolete	111111111	1111222211	1111111111	1111111111	1111111111	1111111111	1111111111	1111111
47 1) Cuneus elongate triangular; 2) cuneus broadly triangular	111111111	1111222211	1111111111	1111111111	1111111111	1111111111	1111111111	1111111
48 1) Cuneal fracture angled anteromesially; 2) cuneal fracture perpendicular to corial margin	111111111	1111222111	1111111111	1111111111	1111111111	1111111111	1111111111	1111111
LEGS								
49 1) Metafemora elongate, slender, more or less cylindrical, usually curving, and often swollen distally; 2) metafemora conspicuously elongate, but distinctly flattened, dorsal and ventral surfaces more or less parallel, not bent or curving; 3) metafemora relatively short, flat, moderately broad, nearly parallel-sided to having weakly arched dorsal surface; 4) metafemora short, broad, swollen, dorsal surface strongly arched [Some variability in Acrorrhinium spp.]	322233322	2222122212	2222222333	3333333321	1111112222	3343333344	4343333333	3333433

TABLE 2—(*Continued*)

	123456789	1111111111 0123456789	2222222222 0123456789	3333333333 0123456789	4444444444 0123456789	5555555555 0123456789	6666666666 0123456789	7777777 0123456
50 1) Metafemora without a stridulatory plectrum; 2) metafemora with a stridulatory plectrum on inner distal surface	111111111	1111111111	1211111111	1111111111	1121111111	1111111111	1111111111	1111111
51 1) Claws with simple ventral surface, at most with parallel or angled ridges; 2) claws with denticles ventrally	12xx21x11	111111111x	11xxx21111	1111111111	1x1xx11xx1	x1111111xx	xx11111111	1x1x111
52 1)Parempodia moderately fleshy and convergent apically; 2) parempodia setiform or very weakly enlarged, at most weakly curving and convergent at apex; 3) parempodia lamellate, recurved and convergent apically [Some Arafuramiris spp. with 1]	333333333	3323111122	2222212222	2222222222	2222222222	2221222222	2221222211	1222223
53 1) Pulvilli absent; 2) pulvilli variable in size, but always on ventral surface of claw; 3) pulvilli large, attached to inner surface of claw	111111111	1111222222	2222222222	2222222222	2222222222	2222222233	3322222222	2222222
ABDOMEN								
54 1) Abdominal segment two wider than long; 2) abdominal segment two distinctly longer than wide	111111111	1111211111	1111111111	1111111111	2112121111	1111111111	1111111111	1111111
55 1)Abdominal sternite two without 2)ornament; abdominal sternite two with striate areas lateroventrally	111111111	1111111111	1111111111	1111111111	2112121111	1111111111	1111111111	1111111
MALE GENITALIA								
56 1) Genital capsule relatively small in comparison to abdominal size; 2) genital capsule moderately large in comparison to abdominal size; 3) genital capsule very large in comparison to abdominal size	222222222	2222222233	3333311111	1111111111	1111111111	2222222222	2222222222	2222222
57 1) Genital capsule without a ventral keel; 2) genital capsule with a ventral keel [Keel absent in Ellenia philippinensis]	111111111	1111111111	1111111111	1111111111	1111111111	1111111111	1112111111	1111111
58 1) Vesica tubular, usually appearing as a simple cylinder; 2) vesica comprised of two chitinous bands	111111111	1111222222	2222222222	2222222222	2222222222	2222222222	2222222222	2222222
59 1) Vesical shaft without median spine, or with an apparently moveable rod; 2) vesical shaft with a slender (sometimes broadened or bifid) median immovable spine-like process (sometimes in the form of a spur) [Except Ambonea morobe with 1]	221121122	1212111111	1111111111	1111111111	1111111111	1111111111	1111111111	1111111
60 1) Vesical shaft either without a median process or with an immobile spine-like process; 2) vesical shaft with an apparently movable rod-like structure mesially	111111111	1111111111	1111111111	1111111111	1111111111	1111111111	1121111111	1111111
61 1) Vesica without sclerotized spine-like processes arising just basad of secondary gonopore; 2) vesica with one or two sclerotized spine-like processes arising just basad of secondary gonopore [Some variability in Acrorrhinium spp.]	111111111	1111111111	2111111111	1111111111	1121111111	1111111111	1111122211	1111111
62 1) Vesica without a series of notches subtending secondary gonopore; 2) vesica with a series of notches subtending secondary gonopore	111111111	1111111111	1111111111	1111111111	1111111111	1111111111	1112111111	1121111

TABLE 2—(*Continued*)

	123456789	1111111111 0123456789	2222222222 0123456789	3333333333 0123456789	4444444444 0123456789	5555555555 0123456789	6666666666 0123456789	7777777 0123456
63 1) Secondary gonopore appearing as a simple semicircular opening, not as a distinct sclerotized entity; 2) secondary gonopore not evident as a sclerotized entity or as a simple opening; 3) secondary gonopore strongly developed, sclerotized, horse-collar shaped, opening laterally; 4) secondary gonopore poorly developed, very weakly sclerotized [Decomia microgonoporos with very poorly developed secondary gonopore]	111112211	1111333333	3333334433	3433344344	4444444444	3333333333	2333333333	3332333
64 1) Secondary gonopore without subtending spicules; 2) secondary gonopore subtended by a small field of glassy spicules	221221122	2222111111	1111111111	1111111111	1111111111	1111111111	1111111111	1111111
65 1) Vesica C- or J-shaped, flat; 2) vesica sigmoid and at least weakly twisted, but never forming a coil; 3) vesica twisted, forming a complete coil [Except Cleotomiris schneirlai with 3; some variability in Acrorrhinium spp.; except Decomioides pulla with 2; distribution not indicated for taxa 27-37 in figure 1494]	111111111	1111222222	2222222122	1212221212	2222x22222	2222222211	1132122222	222233x
66 1) Vesica with membranous elaborations of varying size and shape distad of secondary gonopore, or with a single (rarely paired), sclerotized process of variable length; 2) vesica with two sclerotized blade-like structures arising distad of secondary gonopore; 3) terminal vesical blades with glassy spicules	111111111	1111111111	1111111111	1111111111	1111111111	1222113211	1111111111	1111111
67 1) Phallotheca attached to phallobase; 2) phallotheca attached to posterior wall of genital capsule	222222222	2222222222	2222222222	2222222222	2222222222	2222222222	2222222222	2222221
68 1) Phallotheca strongly C-shaped, basal portion usually strongly projecting under distal portion, strongly hump-backed, very broad distally; 2) phallotheca L-shaped or weakly C-shaped, never strongly C-shaped and with basal portion distinctly projecting under distal portion, nor strongly hump-backed; 3) phallotheca more or less rectilinear	333332333	3333222322	3222222222	2222222222	2222222222	2222222222	2222212222	222222x
69 1) Phallotheca of variable shape, but if L-shaped never narrowed distally to form a small slender "nose"; 2) phallotheca L-shaped, distally narrowed to form a small slender "nose"	111111111	1111111111	1111111111	1111111111	1111111111	1111111122	2211111111	1111111
70 1) Left paramere strongly flattened, splayed out; 2) left paramere row-boat shaped, sometimes weakly flattened and anterior process short, posterior process at most only moderately elevated and never very broad; 3) left paramere rowboat shaped, posterior process strongly elevated and broad [Except Cleotomiris schneirlai with 1; except Wygomiris mingorum and W. taipokau with 1; except Clapmarius turgidus and C. thailandana with 1]	111112111	2121222222	2222222222	2222222222	2222222222	2222222211	1123122133	223222x

TABLE 2—(*Continued*)

	123456789	1111111111 0123456789	2222222222 0123456789	3333333333 0123456789	4444444444 0123456789	5555555555 0123456789	6666666666 0123456789	7777777 0123456
71 1) Anterior process of left paramere in the form of a simple slender or flattened projection; 2) anterior process of left clasper with two branches	111111111	1111111111	1111211111	1111111111	1111111111	1111111111	1111111111	111111x
72 1) Left paramere variously formed, but never with frontal portion very strongly elevated and expanded; 2) frontal portion of left paramere very strongly elevated and expanded	111111111	1111111111	1111111111	1211111211	1111111111	1111111111	1111111111	111111x
FEMALE GENITALIA								
73 1) Posterior wall bulging; 2) posterior wall in female flat, although sometimes with complex elaborations	111x11111	1111222222	2222222222	2222222222	2222222222	2222222222	2222222222	2222222
74 1) Sclerotized rings in female symmetrical; 2) sclerotized rings in female with an asymmetrical sclerotized tube associated with right ring	111x11111	111111xx1x	x1xxx1x111	111111111x	xx1xx1xxxx	x111111111	1111xxxxxx	xx11221

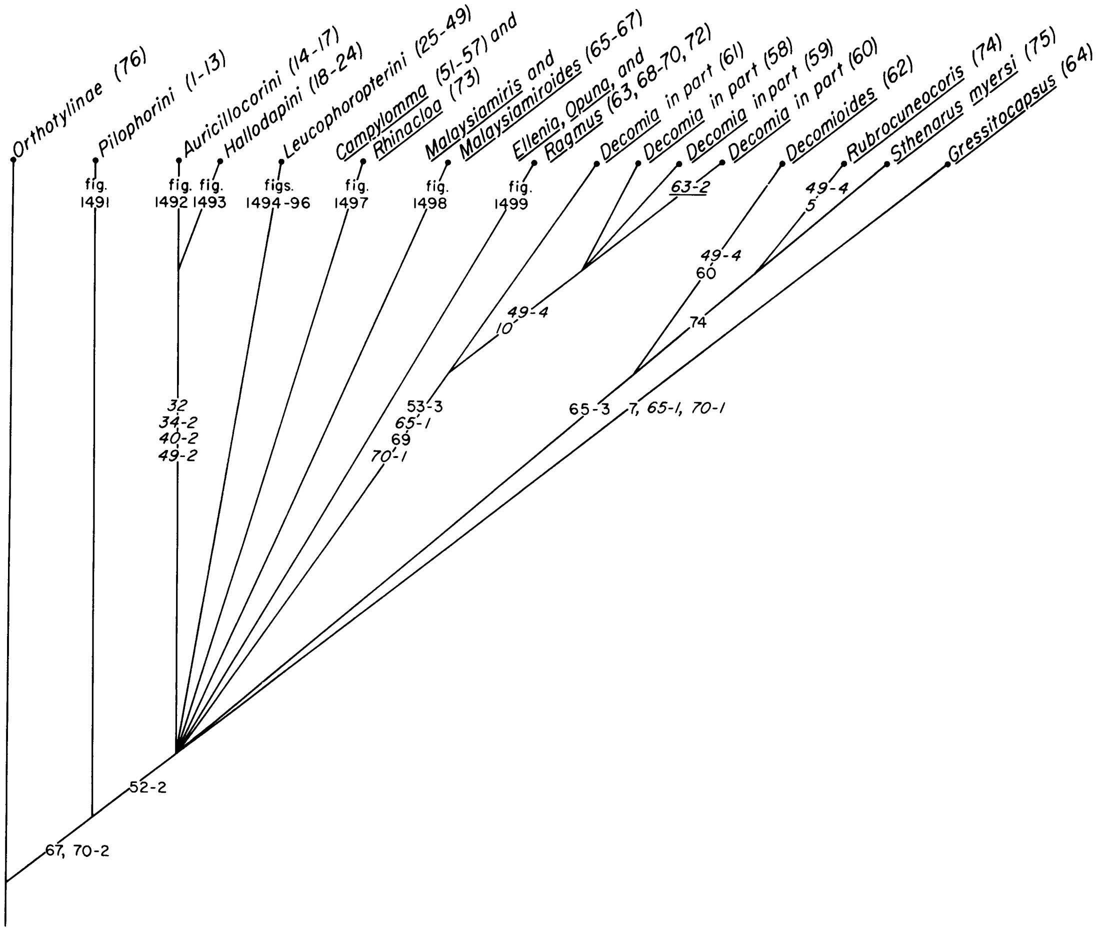

Orthotylinae (76)
Pilophorini (1-13)
Auricillocorini (14-17)
Hallodapini (18-24)
Leucophoropterini (25-49)
Campylomma (51-57) and Rhinacloa (73)
Malaysiamiris and Malaysiamiroides (65-67)
Ellenia, Opuna, and Ragmus (63, 68-70, 72)
Decomia in part (61)
Decomia in part (58)
Decomia in part (59)
Decomia in part (60)
Decomioides (62)
Rubrocuneocoris (74)
Sthenarus myersi (75)
Gressittocapsus (64)
fig. 1491
fig. 1492
fig. 1493
figs. 1494-96
fig. 1497
fig. 1498
fig. 1499
63-2
49-4 5
49-4 60
74
49-4 10
53-3 65-1 69 70-1
65-3
7, 65-1, 70-1
32 34-2 40-2 49-2
52-2
67, 70-2

FIG. 1490. Phylogenetic relationships of Indo-Pacific Phylinae. Note: Characters 65-1 and 70-1 are not treated as synapomorphies of *Decomia* and *Gressittocapsus*, because *Gressittocapsus* does not fit well the description of any state of either character.

TABLE 3
Key to Taxon Codes Used in Table 2

1	*Ambonea* Odhiambo
2	*Bilirania* Carvalho (all species except *B. sundae*)
3	*Bilirania sundae*, new species
4	*Biliranoides*, new genus
5	*Druthmarus* Distant
6	*Paramixia* Reuter
7	*Parasthenaridea* Miller
8	*Pilophorus* Hahn (all species except those listed below)
9	*Pilophorus dailanh*, new species, *P. formosanus* Poppius, *P. javanus* Poppius, *P. typicus* Distant
10	*Pilophorus kockensis*, new species
11	*Pilophorus niger* Poppius, *P. setulosus* Horvath
12	*Pilophorus samoanus* Knight
13	*Pilophorus yunganensis*, new species
14	*Auricillocoris*, new genus
15	*Cleotomiris*, new genus
16	*Cleotomiroides*, new genus
17	*Wygomiris*, new genus
18	*Acrorrhinium* Noualhier
19	*Alloeomimus* Reuter
20	*Clapmarius* Distant
21	*Hallodapus* Fieber
22	*Podullahas*, new genus
23	*Sohenus* Distant
24	*Trichophorella* Reuter
25	*Lasiolabops* Poppius
26	*Leucophoroptera* Poppius
27	*Sejanus* Distant (all species except those listed below)
28	*Sejanus albosignatus* Knight, *S. brassi*, new species, *S. macer*, new species
29	*Sejanus ansevata*, new species
30	*Sejanus biniguni*, new species
31	*Sejanus ecnomiscos*, new species, *S. ecnomioides*, new species
32	*Sejanus elongatus*, new species
33	*Sejanus fijiensis*, new species
34	*Sejanus hongkong*, new species, *S. novocaledonicus*, new species
35	*Sejanus sinuosus*, new species
36	*Sejanus umi*, new species
37	*Sejanus ecnomiscos*, new species
38	*Tytthus* Fieber
39	*Abuyogocoris*, new genus
40	*Arafuramiris*, new genus
41	*Biromiris*, new genus
42	*Ctypomiris*, new genus
43	*Papuamimus*, new genus
44	*Solomonomimus*, new genus
45	*Waterhouseana* Carvalho
46	*Gulacapsus*, new genus
47	*Pseudohallodapocoris*, new genus
48	*Pseudoleucophoroptera*, new genus
49	*Trichocephalocapsus*, new genus
50	*Badezorus* Distant
51.1	*Campylomma* (all species except those listed below)
52	*Campylomma atra*, new species, *C. nigra*, new species
53	*Campylomma breviata* Knight, *C. cuneolata* Knight, *C. fusca* Knight, *C. hivaoae* Knight, *C. marquesana* Knight, *C. rubrotincta* Knight, *C. tinctipennis* Knight
54	*Campylomma malaysiana*, new species, *C. marmarosa*, new species
55	*Campylomma kororenis* Carvalho, *C. novohebridense*, new species
56	*Campylomma chinensis*, new species, *C. livida* Reuter, *C. luzonica*, new species, *C. novoirlandense*, new species
57	*Campylomma collina* Van Duzee
58	*Decomia* Poppius (all species except those listed below)
59	*Decomia appendix*, new species
60	*Decomia colae* (China)
61	*Decomia terminalis*, new species
62	*Decomioides*, new genus
63	*Ellenia* Reuter
64	*Gressittocapsus*, new genus
65	*Malaysiamiris*, new genus (all species except *M. couleeensis*)
66	*Malaysiamiris couleeensis*, new species
67	*Malaysiamiroides*, new genus
68	*Opuna* Kirkaldy (all species except those listed below)
69	*Opuna pilosulus* (Distant)
70	*Opuna sharpianus* (Kirkaldy)
71	*Psallus rubromaculosus* Knight
72	*Ragmus* Distant
73	*Rhinacloa forticornis* Reuter
74	*Rubrocuneocoris*, new genus
75	*Sthenarus myersi* Woodward
76	Orthotylinae

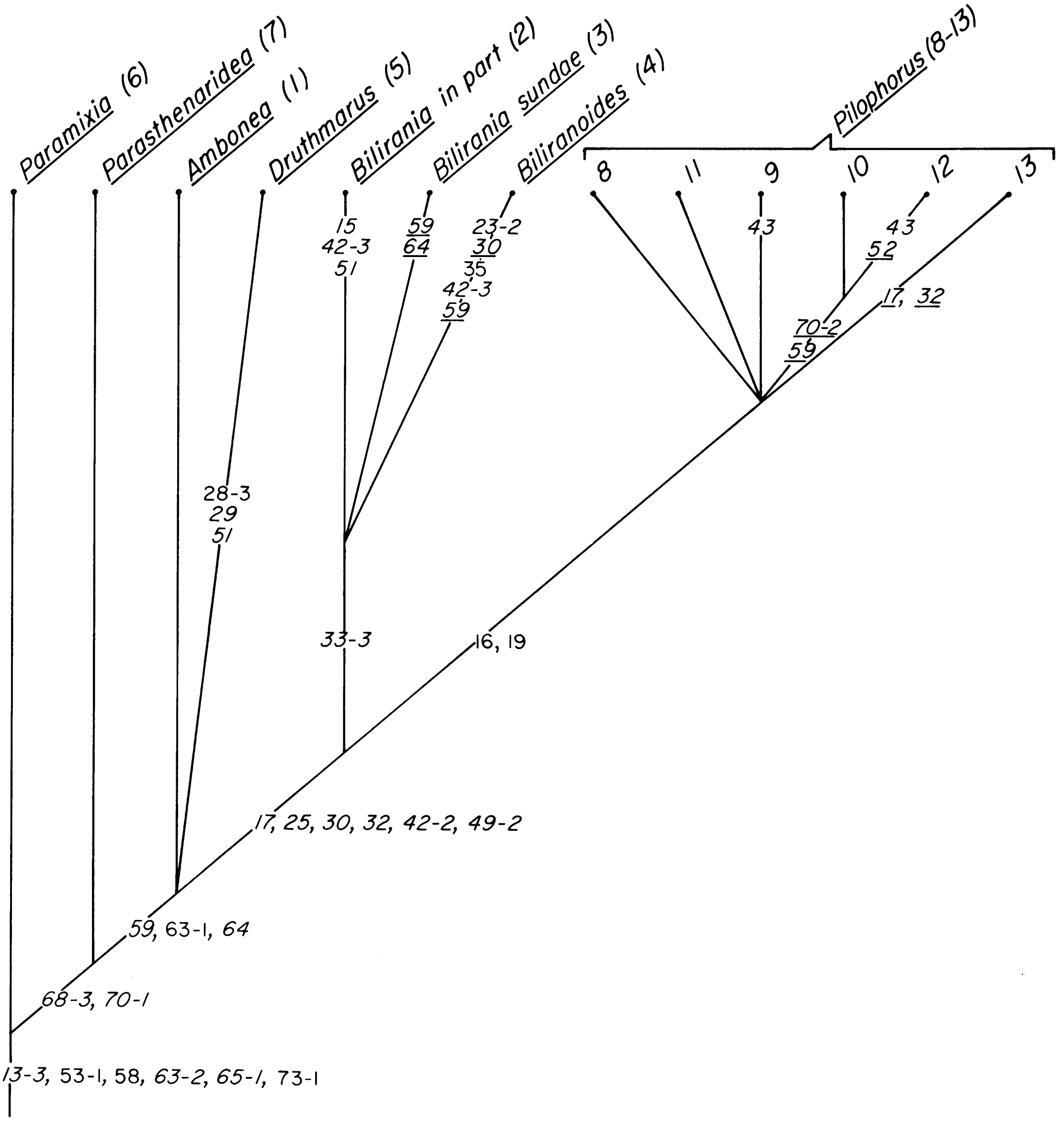

Paramixia (6)
Parasthenaridea (7)
Ambonea (1)
Druthmarus (5)
Bilirania in part (2)
Bilirania sundae (3)
Biliranoides (4)
Pilophorus (8-13)
8
11
9
10
12
13
15
42-3
51
59
64
23-2
30
35
42-3
59
43
43
52
17, 32
70-2
59
28-3
29
51
33-3
16, 19
17, 25, 30, 32, 42-2, 49-2
59, 63-1, 64
68-3, 70-1
13-3, 53-1, 58, 63-2, 65-1, 73-1

FIG. 1491. Phylogenetic relationships of Indo-Pacific Pilophorini.

eral unique characters, and a number more which show limited homoplasy. The diagnosis in Schuh (1974) accurately defines the group, even with the addition of previously unstudied taxa from the Indo-Pacific.

Two rather obvious groupings of pilophorines might be recognized. The first consists of all genera except *Paramixia* and *Parasthenaridea* and is based on the unique and consistent structure of the vesica, as exemplified by characters 59, 63-1, and 64. Of these genera, only *Ambonea* lacks apparent unique defining characters. The second group, a subgroup of the first, supported by a number of characters, consists of *Bilirania, Biliranoides,* and *Pilophorus.* As indicated in figure 1491, *Bilirania sundae* shares no unique characters in common with the remaining *Bilirania* species, and is therefore of provisional generic placement.

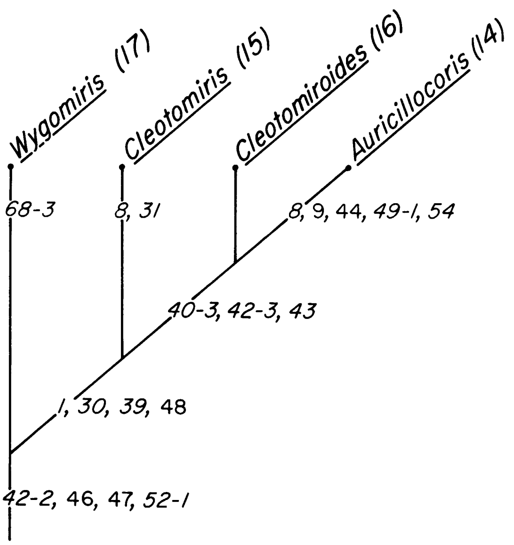


FIG. 1492. Phylogenetic relationships of Auricillocorini.

The largest single assemblage of species in this tribe, the genus *Pilophorus,* uniquely possesses characters 16 and 19. To my knowledge these setal characters have not been used by previous authors, but they do appear to allow for recognition of a monophyletic group. I have not attempted to investigate whether all species currently placed in the genus from outside the study area possess these characters, nor whether species placed in some other genera might possess them.

The two remaining pilophorine genera, *Paramixia* and *Parasthenaridea* have no unique characters indicated in figure 1491. Nonetheless, the vesica in *Parasthenaridea* is unique, although not described in the data matrix in table 2. The structure of the vesica is probably diagnostic for *Paramixia* as well. The structure of the left paramere appears to be unique for a group of *Paramixia* species including *pacificae* and *singalensis* in the Indo-Pacific, some African species (Schuh, 1974), and at least *carmelitana* (Carvalho) in the New World.

AURICILLOCORINI AND HALLODAPINI

This grouping is defined by four characters, three of which (32, 34-2, 40-2) reoccur in a subgroup of the Leucophoropterini (*Cytpomiris* group + *Gulacapsus* group). Although the present arrangement seems to be most parsimonious for the characters as described, the alternative grouping deserves further inquiry, through study of additional characters as well as more detailed study of the characters described in table 2.

AURICILLOCORINI: This Indo-Pacific group is most easily recognized by the structure of the cuneus and the obsolete cuneal fracture. A more detailed study and characterization of the scent-gland evaporatory area (character 40) may indicate that the condition found in the Auricillocorini is indeed unique, in spite of the distribution indicated in table 2. The four described genera are related as shown in figure 1492.

HALLODAPINI: Although information brought to light in this study, including the transfer of *Clapmarius* from the Mirinae and the description of *Podullahas,* does not alter the composition of the Hallodapini appreciably, it should be noted that the structure of the head may be one of the strongest characters supporting the grouping and must be added to the list of diagnostic characters in my 1974 paper. (A similar head structure occurs in several other phyline genera, including *Amblytylus* Fieber, *Macrotylus* Fieber, and *Parafulvius* Carvalho.) Also the relatively large size of the genital capsule and the genitalia appears to be distinctive. The flattened pronotal collar, which has traditionally been used to recognize the Hallodapini, appears to be less useful than previously believed. Based on the analysis of the information in table 2, it appears that the pronotal collar may have evolved as many as four times.

Several subgroups of Hallodapini, based on the Indo-Pacific fauna are indicated in figure 1493. These are best thought of as provisional. Only with analysis of the diverse Ethiopian-Mediterranean fauna and a better understanding of the Nearctic genera currently placed in the group will a well documented picture of relationships emerge.

LEUCOPHOROPTERINI

Carvalho and Gross (1982) have recently discussed the Leucophoropterini in their re-

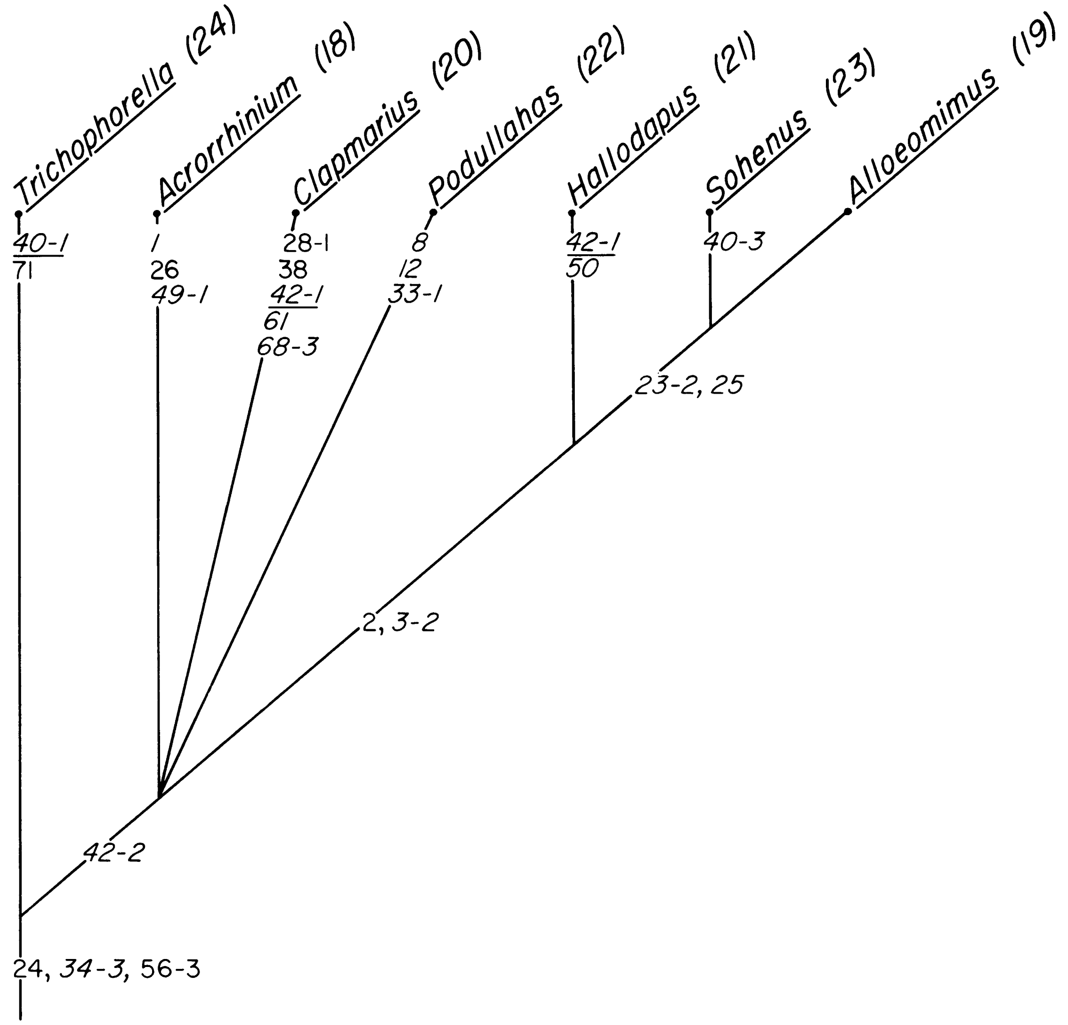

Trichophorella (24)
Acrorrhinium (18)
Clapmarius (20)
Podullahas (22)
Hallodapus (21)
Sohenus (23)
Alloeomimus (19)
40-1
71
1
26
49-1
28-1
38
42-1
61
68-3
8
12
33-1
42-1
50
40-3
23-2, 25
2, 3-2
42-2
24, 34-3, 56-3

FIG. 1493. Phylogenetic relationships of Indo-Pacific Hallodapini.

vision of the Australian *Sejanus* species. They preferred to omit *Tytthus* from the tribe, leaving the diagnosis to rest primarily on the apparent antlike habitus. Since there is nothing unequivocal in the concept of antlike, I am skeptical of groups founded on that basis.

As constituted in this paper, the Leucophoropterini appear as a rather diverse assemblage. The small genital capsule (character 56-1) and the correspondingly small genital structures (whose size becomes painfully obvious during dissection) appear to be the only characteristics uniting all included taxa. The abdomen is often narrow and parallel-sided, and the secondary gonopore is lightly sclerotized and weakly developed in many taxa.

Most genera and species I am placing in the Leucophoropterini (including *Karoocapsus* Schuh from southern Africa) are dark-colored with a cuneus with contrasting white markings basally. The exceptions are *Tytthus, Lasiolabops,* and several species I have placed in *Sejanus.* In my earlier paper (Schuh, 1974), I placed *Lasiolabops* in the Phylini. More detailed study suggests, however, that

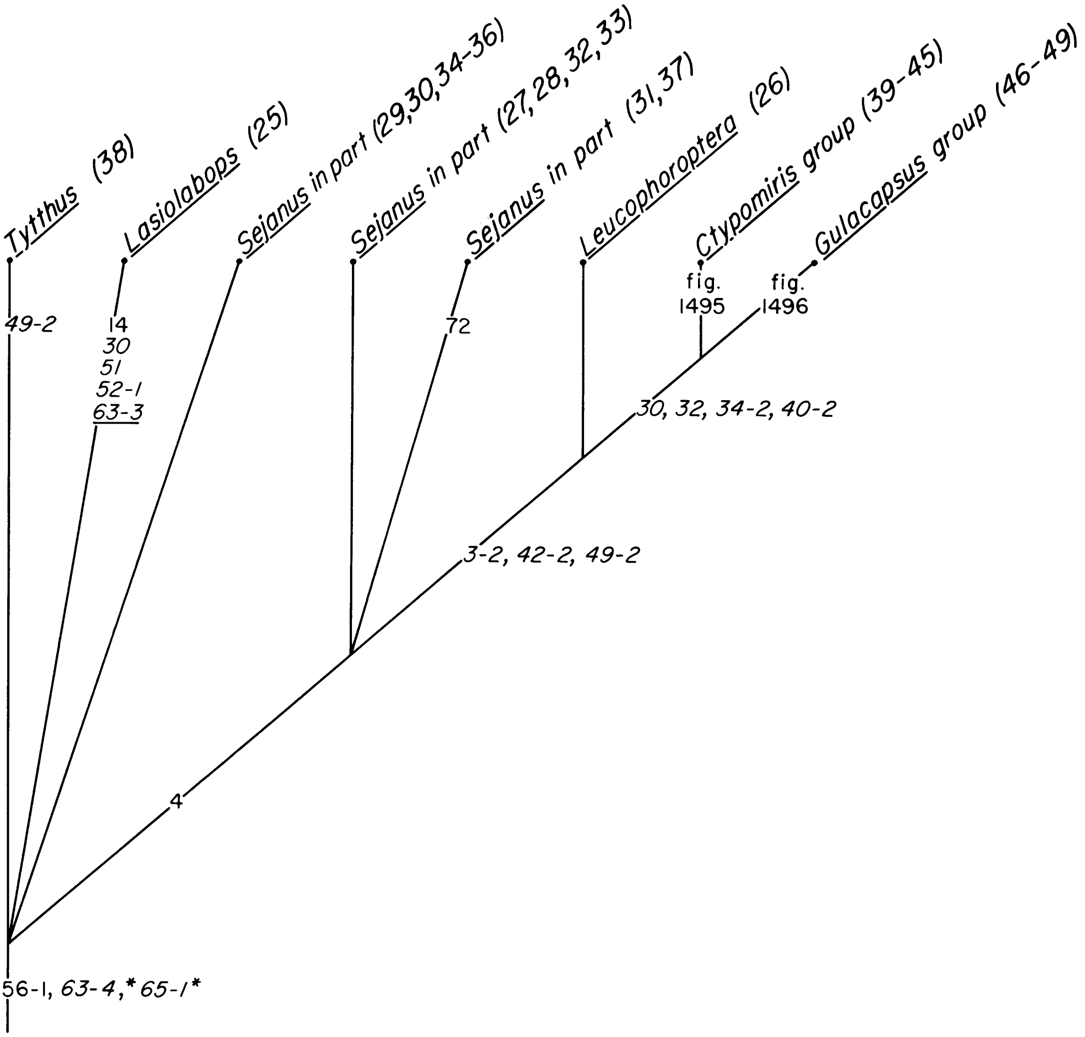

Tytthus (38)
Lasiolabops (25)
Sejanus in part (29,30,34-36)
Sejanus in part (27,28,32,33)
Sejanus in part (31,37)
Leucophoroptera (26)
Ctypomiris group (39-45)
Gulacapsus group (46-49)
fig. 1495
fig. 1496
49-2
14
30
51
52-1
63-3
72
30, 32, 34-2, 40-2
3-2, 42-2, 49-2
4
56-1, 63-4,* 65-1*

FIG. 1494. Phylogenetic relationships of Indo-Pacific Leucophoropterini. (*Note* 1: Characters 63-4 and 65-1 are indicated as applying to all members of the clade. They do, however, vary widely in *Sejanus*, but because that variation shows no discernible pattern, it is not indicated on the diagram. *Note* 2: Of the subdivisions of *Sejanus* represented in the figure, only 31+37 represents a monophyletic group. The other taxa placed in *Sejanus* are indicated as two groups for simplicity of diagram preparation only. None of the indicated subdivisions show a relationship based on characters in table 2.)

this genus shows stronger affinities with the Leucophoropterini than with any known genera placed in other tribes. The denticles on the ventral claw surface and the appressed flattened setae with transverse notches appear diagnostic for the group.

Sejanus, as presently constituted, is almost certainly a polyphyletic group (see also discussion under the genus). The only solution to the problem of recognizing monophyletic groups is a much more detailed investigation of the taxa under study. For purposes of the phylogenetic analysis, I have divided *Sejanus* into eleven subgroups (taxa 27–37). As can be seen in figure 1494, only *ecnomios, ecnomioides,* and *ecnomiscos* (taxa 31 and 37) share distinctive features in common. The study of *Sejanus* is complicated by the fact

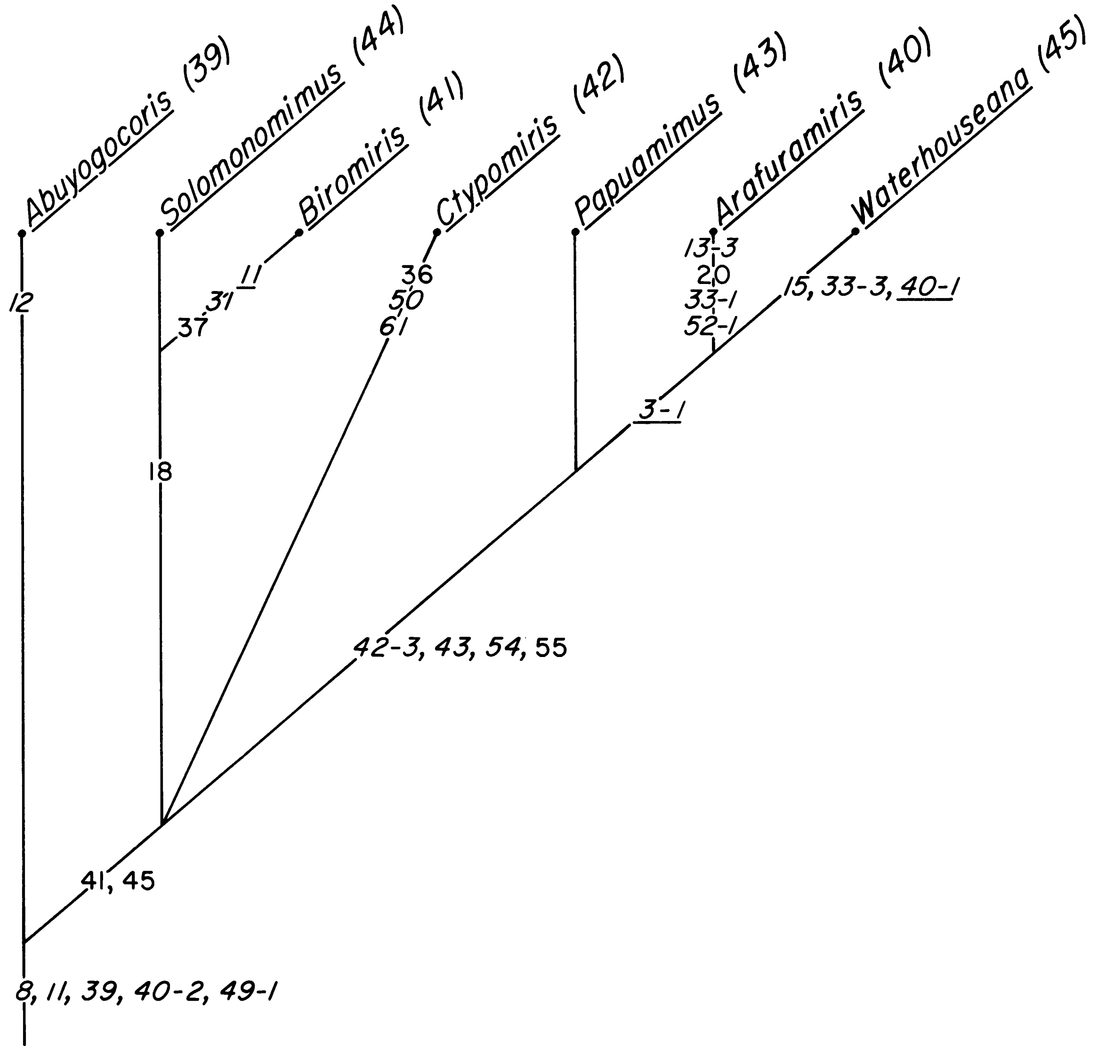

Abuyogocoris (39)
Solomonomimus (44)
Biromiris (41)
Ctypomiris (42)
Papuamimus (43)
Arafuramiris (40)
Waterhouseana (45)
12
37
31
11
18
36
50
61
13-3
20
33-1
52-1
15, 33-3, 40-1
3-1
42-3, 43, 54, 55
41, 45
8, 11, 39, 40-2, 49-1

FIG. 1495. Phylogenetic relationships of *Ctypomiris* Group genera.

that there appear to be scores of species, many of which show strong sexual dimorphism which makes association of the sexes difficult. They are also not well collected.

The *Ctypomiris* Group (fig. 1495) and *Gulacapsus* Group (fig. 1496) are most strongly supported as monophyletic within the Leucophoropterini. Both are restricted to New Guinea, the Solomon Islands, and extreme northern Australia. As indicated above, these two generic assemblages as a unit show some affinities with the Auricillocorini-Hallodapini lineage.

PHYLINI

The Indo-Pacific Phylini is a conspicuously paraphyletic group, as is the group on a worldwide basis. Nonetheless, some obviously monophyletic generic level taxa can be recognized, and some suprageneric groupings are suggested by the data at hand.

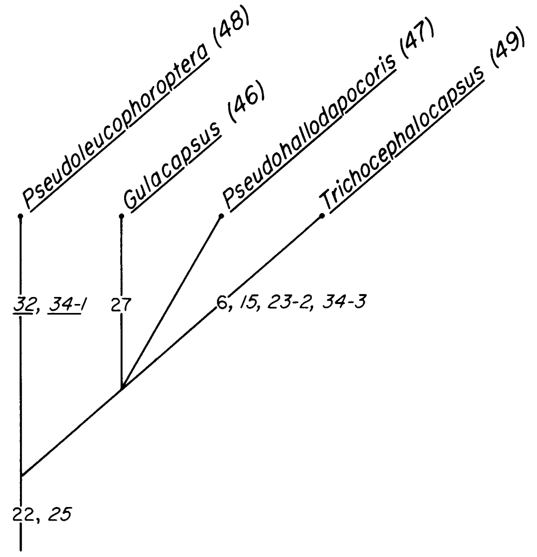


FIG. 1496. Phylogenetic relationships of *Gulacapsus* Group genera.

Campylomma and *Rhinacloa* are united by character 21 (fig. 1497), the row of tiny spicules on the distal dorsal surface of the metafemur. They show a vicariant distribution, with *Campylomma* restricted to the Old World and *Rhinacloa* to the New World. There are also several apparently monophyletic groups of species within *Campylomma* (fig. 1497), including *livida* (taxon 56) and its relatives with their distinctive blades and associated spicules on the vesica, *atra* and *nigra* (taxon 52) with the greatly enlarged metafemora (and the black coloration and short head), and a group of species restricted to the Marquesas Islands (taxon 53), recognized by their conspicuously fleshy parempodia.

The genera *Malaysiamiris* (taxa 65, 66) and *Malaysiamiroides* (taxon 67) appear to be related on the basis of vesical structure (as well as certain aspects of habitus) (fig. 1498).

Ellenia and *Ragmus* might well be treated as a single genus, sharing at least two unique male genitalia characters in common (see discussion under *Ragmus*). They show a possible relationship to species placed in *Opuna,* except possibly *sharpianus* (fig. 1499).

The genus *Decomia,* while obviously a monophyletic group, can only be questionably allied with other genera from the study area. Figure 1490 indicates that *Decomia* and *Gressitocapsus* share characters 65-1 and 70-1 in common. Although this is so as far as the character descriptions are concerned, examination of the structures involved suggests no necessary relationship, but rather indicates the need for further refinement of character analysis and description. Thus, the diagram is presented in a manner that is conspicuously not a most parsimonious representation of the data.

Decomioides, while superficially resembling both *Decomia* and *Rubrocuneocoris,* appears to be most closely related to *Rubrocuneocoris* and *Sthenarus myersi* on the basis of one aspect of vesical morphology (character 65-3).

Finally, *Rubrocuneocoris* and *Sthenarus myersi* are united on the basis of female genitalic structure, each possessing the more or less heavily sclerotized asymmetrical tube associated with right ring of the bursa copulatrix, as described for *Beamerella* Knight and *Hambletoniola* Carvalho by Henry and Schuh (1979). They also possess similarities in the male genitalia. A much wider survey of phyline genitalic morphology will be required to assess the strength of this hypothesis of relationships and to determine what other genera might be involved.

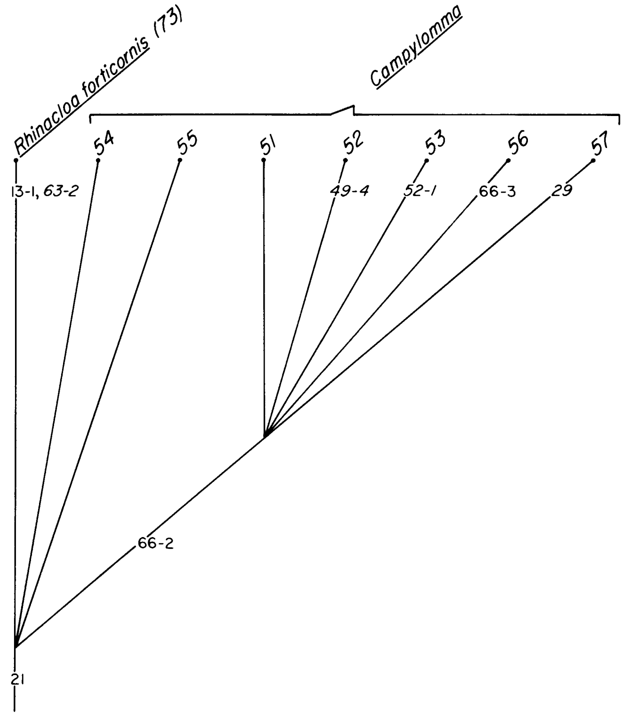

Rhinacloa forticornis (73)
Campylomma
54
55
51
52
53
56
57
13-1, 63-2
49-4
52-1
66-3
29
66-2
21

FIG. 1497. Phylogenetic relationships of *Rhinacloa forticornis* and Indo-Pacific *Campylomma* spp. based on characters in table 2.

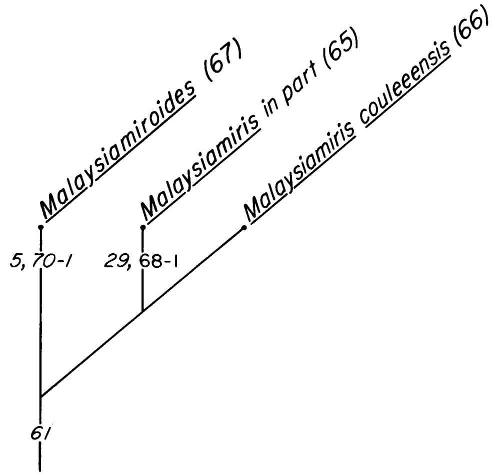

Malaysiamiroides (67)
Malaysiamiris in part (65)
Malaysiamiris couleeensis (66)
5, 70-1
29, 68-1
61

FIG. 1498. Phylogenetic relationships of *Malaysiamiris* and *Malaysiamiroides* spp.

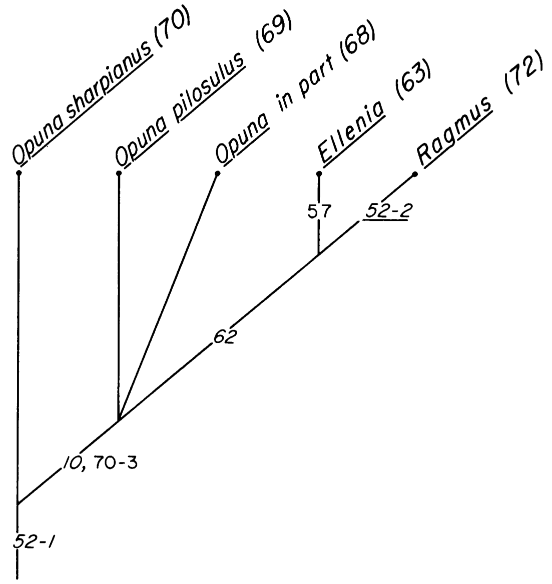

Opuna sharpianus (70)
Opuna pilosulus (69)
Opuna in part (68)
Ellenia (63)
Ragmus (72)
57
52-2
62
10, 70-3
52-1

FIG. 1499. Phylogenetic relationships of Indo-Pacific *Ellenia, Opuna,* and *Ragmus* spp.

APPENDIX

Means and Ranges of Seven Measurements in Millimeters[4]

Genus Abuyogocoris

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
abuyog	1	1.91	.46	0.66	.14	0.56	0.80	0.78
calian	1	1.45	.41	0.56	.23	0.37	0.72	0.51
liwo	1	2.53	.50	0.71	.19	0.66	1.01	1.05
tawitawi	1	1.93	.43	0.60	.15	0.49	0.79	0.87

Genus Acrorrhinium

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
bismarkensis	2	4.43 (1 spec.)	.70/.68-.72	0.80/0.77-0.82	.37	0.80 (1 spec.)	1.21 (1 spec.)	2.87 (1 spec.)
hongkong	2	3.83/3.50-4.15	.70/.64-.76	1.00/0.99-1.01	.31/.29-.32	0.74/0.69-0.79	1.40/1.35-1.45	2.12 (1 spec.)
monoceros	1	4.15	.67	0.89	.32	0.78	1.09	2.49
oecophylloides	1	6.40 (tot.len.)	---	1.16	.85	1.20	1.20	2.60
nr. spicatus(♀)	1	4.70 (approx.)	.66	0.85	.44	0.82	1.21	3.30

Genus Alloeomimus

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
muiri	2	2.45/2.36-2.53	.65/.61-.69	0.64/0.60-0.67	.34/.33-.35	0.52	0.80/0.77-0.88	1.30/1.24-1.36

Genus Ambonea

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
ifugao	1	2.01	.65	0.92	.39	0.44	1.17	0.98
koroba	2	2.96	.82	1.23	.48	0.62	1.65	1.48
morobe	4	2.23/2.17-2.30	.63/.61-.66	1.08/1.01-1.12	.43/.41-.45	0.52/0.49-0.54	1.32/1.25-1.37	0.91/0.73-1.03

Genus Arafuramiris

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
biakanus	1	1.82	.50	0.66	.32	0.64	0.84	0.79
dreikikir	1	2.67	.79	0.99	.25	0.80	1.08	1.36
gressitti	1	1.87	.51	0.74	.20	0.64	0.79	0.88
jimmi	1	2.36	.56	0.84	.28	0.79	1.05	1.12

Genus Auricillocoris

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
coonoor	2	2.53/2.50-2.55	.63/.61-.64	0.74/0.74-0.75	.30/.27-.32	0.71/0.67-0.75	0.99/0.97-1.01	0.90/0.89-0.90
tawauanus	2	2.17/2.13-2.20	.60/.59-.60	0.70/0.78-0.79	.78	0.73/0.69-0.76	0.99/0.95-1.02	1.01 (1 spec)
zamboanga	2	2.25/2.23-2.26	.62/.61-.62	0.79	.24	0.78/0.77-0.79	0.92/0.91-0.93	1.02

Genus Badezorus

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
tyrianus	1	1.55	.38	0.57	.30	0.28	0.78	0.58

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[4] All specimens male unless otherwise indicated.

Genus Bilirania

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
maculata	2	2.69/2.67-2.70	.86/.84-.87	0.87/0.86-0.87	.29/.28-.29	0.71/0.70-0.71	0.84/0.81-0.86	1.23/1.22-1.24
myrmecoides	2	2.68/2.62-2.73	.87/.86-.88	0.82/0.80-0.83	.30	0.87/0.81-0.93	0.91/0.90-0.91	1.26/1.24-1.27
palawana	2	2.82/2.77-2.86	.89/.87-.91	0.86/0.84-0.87	.35/.34-.35	0.95	1.00/.99-1.00	1.20
pleiku	2	2.72/2.66-2.78	.89/.88-.89	0.80/0.77-0.83	.34/.33-.34	0.87/0.84-0.90	0.98/0.96-1.00	1.21/1.18-1.23
sumatrana	2	2.60/2.55-2.66	.88/.87-.88	0.84/0.83-0.84	.33	0.89/0.86-0.91	0.91/0.89-0.91	1.15/1.13-1.17
sundae	1	2.78	.85	0.85	.22	0.68	0.92	1.39

Genus Biliranoides

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
culion	1	2.90	.98	0.91	.44	0.84	0.97	1.40
kathleenae	1	3.00	.95	0.84	.40	0.80	0.84	1.23

Genus Biromiris

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
bulolo	1	2.01	.56	0.73	.30	0.66	0.94	0.63
cyclops	1	1.80	.52	0.67	.27	0.58	0.81	0.67
enarotadi	1	2.50/2.48-2.55	.60/.59-.60	0.74/0.78-0.83	.37/.35-.38	0.76/0.73-0.80	1.12/1.06-1.19	0.88/0.87-0.90

Genus Campylomma

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
aitutaki	1	1.53	.40	0.63	.25	0.35	0.85	0.68
atra	1	1.65	.43	0.70	.30	0.40	1.03	0.55
biak	5	1.86/1.75-1.98	.39/.38-.40	0.71/0.68-0.75	.21/.20-.23	0.39/0.35-0.43	0.89/0.80-0.98	0.88/0.83-0.95
boharti	5	1.58/1.50-1.63	.41/.40-.43	0.63/0.60-0.65	.28	0.37/0.35-0.40	0.80/0.78-0.83	0.61/0.58-0.63
boninensis	5	1.54/1.50-1.63	.37/.35-.38	0.60/0.58-0.60	.28/.28-.30	0.33/0.33-0.35	0.83/0.85-0.85	0.56/0.55-0.60
breviata	4	1.89/1.83-1.98	.43/.40-.45	0.80/0.78-0.83	.28	0.38/0.35-0.40	1.02/0.98-1.05	0.88/0.80-0.94
breviceps	3	1.57/1.53-1.63	.35/.33-.38	0.61/0.60-0.63	.29/.28-.30	0.33/0.30-0.35	0.83/0.80-0.85	0.58/0.58-0.60
brunneicollis	5	1.51/1.50-1.53	.37/135-.38	0.61/0.60-0.63	.28/.28-.30	0.31/0.28-0.33	0.81/0.78-0.83	0.49/0.45-0.53
carolinensis	1	1.40	.33	0.55	.28	0.28	0.75	0.48
chichijima								
chinensis	5	1.74/1.65-1.80	.38/.38-.40	0.61/0.58-0.63	.24/.20-.25	0.36/0.33-0.40	0.88/0.85-0.90	0.59
collina	1	1.96	.48	0.75	.33	0.36	1.08	0.70
cookensis	4	1.46/1.43-1.50	.36/.35-.38	0.63/0.60-0.65	.26/.25-.28	0.31/0.30-0.33	0.81/0.80-0.83	0.57/0.55-0.58
cuneolata	3	1.90/1.85-1.93	.38/.36-.40	0.68	.28/.28-.30	0.35/0.330.38	0.93/0.90-0.98	0.90/0.93-0.98
eniwetok	5	1.70/1.65-1.73	.41-.40-.43	0.68	.27/.25-.28	0.36/0.33-0.38	0.92/0.88-0.95	0.59/0.58-0.60
fusca	5	2.08/1.93-2.30	.43/.40-.48	0.74/0.70-0.78	.35	0.41/0.38-0.45	1.04/0.93-1.13	0.82/0.73-0.88
guadalcanalica	4	1.34/1.33-1.35	.34/.33-.35	0.52/0.51-0.53	.23	0.28/0.28-0.30	0.76/0.73-0.78	0.42/0.40-0.43
hivaoae	3	1.96/1.98-2.03	.43/.43-.45	0.75/0.70-0.80	.33/.33-.35	0.48/0.38-0.40	1.06/0.95-1.13	0.71/0.66-0.74
irianica	4	1.51/1.35-1.63	.33/.30-.38	0.58/0.55-0.60	.26/.25-.28	0.30/0.28-0.33	0.80/0.78-0.88	0.46/0.40-0.53
kororensis	1	1.53	.35	0.63	.28	0.33	0.83	0.53
kraussi	3	2.03/2.00-2.10	.45/.43-.48	0.74/0.73-0.75	.32/.30-.33	0.42/0.40-0.45	1.05/1.00-1.10	0.79/0.78-0.80
leyteana	3	1.34/1.33-1.38	.33/.33-.35	0.53/0.53-0.55	.21/.20-.23	0.28	0.74/0.73-0.78	0.43
livida (India)	3	1.61/1.60-1.63	.38	0.61/0.60-0.63	.22/.20-.23	0.33	0.81/0.80-0.83	0.54/0.53-0.55
lividicornis	5	1.49/1.35-1.63	.38/.35-.40	0.62/0.58-0.65	.22/.20-.23	0.34/0.34-0.38	0.83/0.75-0.88	0.51/0.45-0.55
longirostris	4	1.93/1.83-2.04	.43/.40-.45	0.74/0.73-0.78	.31/.28-.33	0.43/0.38-0.48	1.06/1.03-1.10	0.85/0.80-0.88
luzonica	5	2.13/2.00-2.25	.42/.40-.43	0.70/0.68-0.73	.24/.23-.25	0.41/0.38-0.48	1.04/0.98-1.08	0.79/0.75-0.83
malaysiana	2	1.50	.38	0.63	.25	0.36/0.35-0.38	0.84/0.83-0.85	0.68
marjorae	5	1.34/1.23-1.43	.35/.33-.38	0.55/0.55-0.58	.20/.19-.20	0.29/0.28-0.30	0.73/0.68-0.80	0.48/0.43-0.50

Genus Campylomma (continued)

marmarosa	2	1.61/1.58-1.65	.36/.35-.38	0.60	.23	0.31/0.30-0.33	0.89/0.88-0.90	0.81/0.80-0.83
marquesana	12	1.63/1.58-2.00	.41/.38-.45	0.68/0.60-0.75	.28/.28-.30	0.34/0.30-0.43	0.94/0.83-1.08	0.75/0.65-0.93
marshallensis	5	1.55/1.50-1.60	.40/.38-.40	0.63/0.60-0.65	.27/.25-.28	0.34/0.33-0.38	0.83/0.80-0.85	0.53/0.50-0.55
minuenda	5	1.47/1.40-1.60	.35/.33-.38	0.57/0.55-0.60	.28	0.30/0.28-0.33	0.82/0.75-0.90	0.56/0.53-0.60
near monticola	2	1.66/1.65-1.68	.38	0.61/0.60-0.63	.20	0.36/0.35-0.38	0.88	0.63
nigra	2	1.48	.40	0.66/0.65-0.68	.30	0.36/0.35-0.38	0.90	0.48
noumeae	5	1.58/1.48-1.65	.39/.38-.40	0.64/0.60-0.65	.28/.25-.28	0.22/0.33-0.38	0.87/0.80-0.90	0.56/0.50-0.58
novocaledonica	5	1.51/1.45-1.55	.38	0.61/0.58-0.63	.26/.25-.28	0.33/0.28-0.35	0.83/0.78-0.88	0.55/0.53-0.58
novohebridense	1	1.78	.45	0.75	.28	0.35	0.90	0.63
novoirlandense	2	2.18/2.15-2.20	.45	0.74/0.73/0.75	.24/.23-.25	0.41/0.40-0.43	1.05	0.95
pacificae	7	1.54/1.38-1.65	.39/.38-340	0.63/0.63-0.65	.25/.25-.28	0.34/0.30-0.35	0.84-0.75-0.88	0.55/0.50-0.58
palauana	1	1.40	.35	0.58	.20	0.30	0.73	0.53
palauensis	2	1.55	.38	0.61/0.60-0.63	.27/.26-.28	0.34/0.33-0.35	0.80	0.50
pallida	1	1.55	.38	0.63	.28	0.38	0.63	0.53
papuana	4	1.91/1.88-1.98	.41/.40-.43	0.73/0.73-0.75	.32/.30-.33	0.40/0.38-0.43	0.97/0.95-1.00	0.76/0.73-0.78
ponapensis								
rapae	5	1.64/1.53-1.73	.37/.35-.38	0.61/0.58-0.63	.30	0.34/0.30-0.38	0.84/0.80-0.88	0.59/0.53-0.63
raratongana	2	1.90	.43	0.71/0.70-0.73	.33	0.38/0.35-0.40	0.93/0.90-0.95	0.91/0.88-0.95
rubrotincta	5	1.86/1.75-1.93	.41/.40-.43	0.72/0.70-0.73	.27/.25-.28	0.38/0.35-0.40	1.01/0.98-1.03	0.96/0.90-1.03
sandaracine	2	1.79/1.75-1.83	.40	0.68	.30	0.36	1.00	0.75/0.73-0.78
sclephracantha	2	----	.39/.38-.40	0.68/0.65-0.70	.34/.33-.35	--	0.93	0.81/0.78-0.85
tahitica	5	1.72/1.55-1.78	.40/.38-.45	0.65/0.60-0.68	.28/.26-.30	0.37/0.35-0.40	0.81/0.78-0.88	0.63/0.55-0.68
tinctipennis	9	2.09/2.00-2.25	.46/.45-.48	0.78/0.75-0.80	.33/.33-.35	0.41-0.38-0.45	1.08/1.00-1.13	0.92/0.86-0.93
townesi	5	1.50/1.43-1.55	.35/.34-.38	0.60/0.58-0.63	.30/.28-.30	0.32/0.30-0.35	0.81/0.75-0.85	0.55/0.53-0.60
ulithiensis	3	1.48/1.45-1.53	.38/.35-.40	0.60/0.58-0.63	.26/.25-.28	0.33	0.78/0.75-0.80	0.48/0.48-0.50
wakeana	5	1.64/1.50-1.73	.39/.38-.40	0.62/0.58-0.65	.29/.28-.30	0.36/0.33-0.40	0.84/0.80-0.88	0.61/0.58-0.65
yapensis	4	1.56/1.50-1.60	.37/.35-3.8	0.61/0.60-0.65	.27/.25-.28	0.35	0.79/0.78-0.83	0.54/0.53-0.58

Genus Clapmarius

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
kalabakan	2	3.46/3.41-3.50	.51/.50-.51	0.71/0.68-0.73	.33/.31-.34	0.84;0.81-0.87	1.24/1.18-1.30	1.79/1.75-1.82
kualalumpur	(specimen badly mutilated)							
thailandana	1	2.76	.38	0.64	.28	0.69	1.15	1.14
turgidus	1	----	---	0.60	.25	0.40	1.10	1.05

Genus Cleotomiris

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
bicolor	1	1.62	.51	0.58	.28	0.60	0.80	0.74
borneoensis	1	2.61	.65	0.85	.21	0.79	1.07	1.15
chinensis	4	2.29/2.22-2.35	.48/.47-.50	0.63/0.61-0.64	.33/.32-.33	0.70/0.66-0.73	1.07/1.06-1.09	1.32/1.29-1.37
schneirlai	4	2.50/2.43-2.56	.59/.57-.61	0.85/0.82-0.87	.20/.19-.21	0.70/0.63-0.78	1.09/1.05-1.12	1.09/1.04-1.14

Genus Cleotomiroides

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
ferrugineus	2	2.46/2.37-2.54	.61	0.69/0.68-0.69	.29	0.74/0.70-0.78	1.08/1.03-1.13	1.20/1.19-1.20
spadix	1	2.41	.66	0.74	.28	0.66	1.06	--

Genus *Ctypomiris*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
brendae	2	1.86	.49	0.55/0.53-0.56	.27/.24-.30	0.51	0.77/0.76-.0.77	0.83/0.82-0.84
kokure (♀)	1	2.20	.54	0.63	.18	0.53	0.88	0.90

Genus *Decomia*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
appendix	2	1.22/1.20-1.25	.41/.40-.43	0.54/0.53-0.55	.33	0.25/0.23-0.28	0.74/0.73-0.75	0.38/0.38-0.40
brincki	4	1.63/1.58-1.75	.44/.43-.45	0.61/0.58-0.63	.34/.33-.35	0.35/0.33-0.38	0.91/0.88-0.95	0.44/0.43-0.48
cephalotes	1	1.53	.48	0.68	.35	0.35	1.00	0.44
chiangdaoensis	1	1.73	.43	0.63	.33	0.40	1.03	0.43
dialeptos	2	1.25	.40/.38-.43	0.55	.29/.28-.30	0.29/0.28-0.30	0.70/0.63-0.78	0.43
fuscoscutellata	3	1.76/1.75-1.78	.49/.48-.50	0.73/0.70-0.75	.35	0.38	1.15	0.53/0.50-0.55
gomphocoxa	1	1.67	.30	0.55	.35	0.35	0.97	0.42
gressitti	5	1.52/1.40-1.58	.44/.43-.45	0.48/0.58-0.63	.28	0.35/0.33-0.38	0.88/0.80-0.93	0.46/0.43-0.48
indochinensis	4	1.63/1.58-1.68	.45/.43-.45	0.60/0.58-0.63	.32/.30-.35	0.35/0.33-0.38	0.94/0.88-1.00	0.43/0.43-0.45
kalabakanensis	1	1.35	---	0.48	.33	0.28	0.70	0.43
maai	5	1.73/1.63-1.88	.50	0.64/0.63-0.65	.30	0.40/0.38-0.43	1.04/1.00-1.10	0.60/0.55-0.65
magna	5	1.89/1.88-1.90	.46/.45-.48	0.68/0.65-0.70	.37/.35-.38	0.38/0.35-0.40	1.14/1.10-1.18	0.51/0.48-0.53
malayensis	10	1.74/1168-1.80	.49/.45-.50	0.61/0.58-0.63	.33/.30-.38	0.35/0.30-0.40	0.95/0.88-1.00	0.52/0.48-0.58
microgonoporos	5	1.13/1.08-1.18	.32/.30-.33	0.45/0.43-0.48	.26/.25-.28	0.25/0.23-0.25	0.60/0.53-0.68	0.50/0.45-0.55
minuscula	2	1.46/1.40-1.53	.43	0.56/0.55-0.58	.34/.33-.35	0.31/0.30-0.33	0.86/0.83-0.90	0.40/0.38-0.43
nigroalba	2	1.33	.40	0.54/0.53-0.55	.29/.28-.30	0.29/0.28-0.30	0.79/0.78-0.80	0.40/0.33-0.43
notata	5	1.41/1.35-1.45	.41/.40-.43	0.57/0.55-0.58	.31/.30-.33	0.32/0.28-0.33	0.87/0.85-0.88	0.47/0.45-0.48
papuensis	5	1.63/1.58-1.68	.45/.45-.45	0.63/0.63-0.65	.35/.35-.38	0.34/0.30-0.35	0.98/0.95-1.00	0.50/0.48-0.50
parva	5	1.40/1.33-1.55	.42/.40-.43	0.55/0.53-0.60	.32/.30-.33	0.30/0.38-0.33	0.80/0.78-0.88	0.48/0.45-0.50
pedunculata	1	1.25	.38	0.50	.33	0.28	0.75	----
pendleburyi	1	1.88	.50	0.70	---	0.43	1.18	0.50
perparvula	1	1.13	.38	0.48	.30	0.25	0.70	----
pisina	5	1.39/1.35-1.42	.40/.40-.42	0.56/0.52-0.57	.33	0.32/0.30-0.33	0.84/0.80-0.88	0.38/0.33-0.43
samoanus (♀)	1	1.38	.39	0.56	.33	0.28	0.83	0.34
near *samoanus*	1	1.40	.43	0.50	.33	0.30	0.83	0.40
srilankensis	1	1.56	.48	0.60	.35	0.38	0.93	0.45
sumatrana	1	1.47	.48	0.55	.35	0.33	0.85	----
tenompokensis	5	1.73/1.60-1.80	.47/.45-.48	0.59/0.55-0.50	.34/.33-.35	0.36/0.35-0.38	0.95/0.85-1.00	0.54/0.50-0.55
terminalis	6	1.20/1.15-1.25	.40/.38-.43	0.48/0.43-0.50	.28/.28-.30	0.25/0.18-0.30	0.74/0.70-0.80	0.43/0.43-0.45
torrevillasi	1	1.73	.48	0.70	.35	0.40	1.05	0.48
tytthos	1	1.40	.40	0.55	.33	0.30	0.80	0.45
vergrandis	2	1.33	.39/.38-.40	0.55	.33	0.30	0.80	0.36/0.35-0.38

Genus *Decomioides*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
bacchusi	1	1.40	.37	0.50	.25	0.32	0.80	0.55
brassi	6	1.37/1.15-1.50	.32/.30-.37	0.52/0.47-0.55	.27/.22-.30	0.29/0.25-0.32	0.78/0.67-0.82	0.47/0.40-0.57
innotata	5	1.25/1.22-1.30	.33/.30-.35	0.48/0.47-0.51	.30	0.25/0.22-0.27	0.74/0.72-0.75	0.41/0.36-0.50
novobritannicae	5	1.11/1.05-1.32	.32/.25-.32	0.48/0.45-0.52	.28/.25-.30	0.26/0.25-0.27	0.73/0.70-0.75	0.48/0.45-0.52
philippinensis	1	1.52	.30	0.55	.32	0.25	0.87	0.60
pulla	1	1.58	.37	0.60	.30	0.30	0.90	0.60
schneirlai	5	1.29/1.20-1.37	.34/.30-.37	0.51/0.50-0.55	.25/.25-.27	0.26/0.22-0.30	0.77/0.70-0.85	0.46/0.42-0.52
similis	5	1.45/1.30-1.52	.37/.32-.40	0.57/0.52-0.60	.28/.27-.30	0.32/0.27-0.37	0.81/0.75-0.85	0.63/0.40-0.65

Genus Druthmarus

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
coxalis	1	2.76	.66	1.02	.44	0.65	1.33	1.12
magnicornis	1	2.00	.50	0.78	.38	0.38	1.03	0.85
philippinensis	5	2.18/2.13-2.26	.57/.57-.59	0.79/0.77-0.80	.37/.36-.38	0.50/0.47-0.52	0.98/0.97-1.01	0.84/0.82-0.87

Genus Ellenia

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
novobritannicae	2	1.65/1.63-1.68	.43	0.66/0.65-0.68	.33	0.35	0.95	0.66/0.65-0.68
novoguinensis	3	1.98/1.93-2.00	.48/.48-.50	0.74/0.73-0.75	.37/.35-.40	0.38/0.35-0.40	1.08/1.05-1.10	0.84/0.83-0.88
obscuricornis	5	1.93/1.83-2.00	.41/.40-.43	0.71/0.68-0.73	.36/.35-.38	0.38/0.35-0.40	1.03/1.98-1.10	0.75/0.70-0.80
philippinensis	5	2.04/1.90-2.15	.47/.45-.48	0.72/0.70-0.75	.36/.35-.38	0.39/0.38-0.40	1.13/1.03-1.18	0.99/0.88-1.13

Genus Gressittocapsus

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
rugulosus	3	1.66/1.63-1.72	.39/.33-.43	0.62/0.60-0.63	.33	0.31/0.28-0.33	0.89/0.88-0.90	0.93/0.83-0.98

Genus Gulacapsus

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
moresbyana	1	2.39	.74	0.65	.21	0.43	0.94	1.20
nondugl	2	2.33/2.32-2.33	.63/.62-.63	0.63/0.62-0.64	.25	0.44/0.43-0.45	0.99/0.98-0.99	1.33/1.21-1.44
novoguinensis	2	2.03/1.98-2.08	.61	0.59/0.58-0.59	.20/.18-.22	0.43	0.74/0.72-0.75	0.96/0.91-1.00

Genus Hallodapus

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
albofasciatus	3	2.15/2.06-2.28	.43/.41-.45	0.56/0.54-0.59	.22/.22-.23	0.36/0.32-0.39	0.82/0.79-0.86	1.07/1.00-1.23
near brunneus	2	2.62/2.50-2.74	.39/.39-.39	0.64/0.61-0.66	.29/.28-.30	0.47/0.45-0.49	0.98-0.95-1.00	1.23(1 spec.)
centrimaculatus	2	1.79/1.72-1.85	.35	0.50/0.48-0.52	.21/.20-.21	0.32/0.31-0.33	0.73/0.69-0.77	0.96/0.95-0.96
discriminatus	2	1.86/1.80-1.91	.35/.34-.36	0.48/0.47-0.49	.24/.23-.25	0.32/0.31-0.33	0.72/0.71-0.72	0.96/0.93-0.98
fasciatus	3	1.83/1.75-1.92	.35/.33-.36	0.49/0.47-0.51	.25/.24-.25	0.38/0.36-0.40	0.75/0.71-0.79	0.89/0.79-0.99
indicus	2	1.90/1.88-1.92	.34	0.51/0.50-0.51	.25/.24-.25	0.38	0.84/0.83-0.85	0.74/0.73-0.75
luridus	2	2.46/2.30-2.62	.41/.39-.43	0.57/0.54-0.59	.26/.25-.26	0.41/0.39-0.43	0.90/0.54-0.95	1.22/1.13-1.31
maculatus	2	2.09/1.87-2.30	.38/.35-.40	0.55/0.51-0.58	.27/.26-.28	0.44/0.41-0.46	0.91/0.87-0.95	0.95/0.85-1.04
persimilis	(no specimens available)							
near persimilis	1	2.28	.36	0.57	.25	0.43	0.86	1.04
ravenar	3	2.12/2.03-2.23	.42/.38-.46	0.52/0.60-0.63	.25/.25-.26	0.38/0.36-0.41	0.87/0.81-0.90	0.93/0.92-0.93
zonatus	(no specimens examined)							

Genus Lasiolabops

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
cosmopolites	4	2.51/2.25-2.86	.59/.54-.62	1.02/0.98-1.10	.49/.46-.52	0.59/0.53-0.64	1.19/1.05-1.37	1.55/1.42-1.73
irianicus	1	3.08	.82	1.24	.52	0.73	1.39	1.81
kokoda	2	2.58 (1 spec.)	.60/.58-.62	0.99/0.95-1.03	.46/.45-.47	0.57/0.52-0.61	1.19/1.17-1.20	1.23/1.05-1.41

Genus *Leucophoroptera*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
novoirlandense	3	1.55/1.49-1.60	.49/.48-.51	0.58/0.57-0.60	.20/.20-.21	0.37	0.69	0.89/0.87-0.92
philippinensis	2	2.01/2.00-2.01	.64/.62-.65	0.68/0.67-0.69	.19/.18-.19	0.50/0.49-0.50	0.73	1.05/1.04-1.06
solomonensis	1	1.48 (approx)	.46	0.57	.21	0.38	0.60	0.69

Genus *Malaysiamiris*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
bellae	3	1.32/1.27-1.37	.28/.25-.30	0.53/0.52-0.55	.27/.25-.30	0.25	0.73/0.72-0.75	0.45/0.45-0.47
couleeensis	3	1.82/1.78-1.85	.41/.40-.43	0.80/0.78-0.83	.40	0.42/0.40-0.43	1.03/1.00-1.05	0.74/0.73-0.75
cyanocephalus	2	1.15	.28	0.44/0.43-0.45	.25	0.24/0.23-0.25	0.63	----
elongatus	5	1.35/1.30-1.40	.30/.30-.32	0.53/0.50-0.55	.25/.22-.27	0.24/0.22-0.27	0.66/0.65-0.67	0.55/0.45-0.60
lacsensis	2	1.83	.38/.35-.40	0.73/0.70-0.75	.38	0.36/0.35-0.38	0.90/0.85-0.95	0.66/0.63-0.70
leyteanus	1	1.33	.28	0.53	.28	0.25	0.75	0.40
magnicornis	1	1.78	.30	0.65	.28	0.28	0.80	0.68
novocaledonicus	3	1.60/1.53-1.65	.34/.30-.38	0.65	.33	0.32/0.30-0.33	0.79/0.78-0.80	0.60
submagnicornis	1	1.83	.25	0.73	.38	0.33	0.95	0.73
tawauanus	3	1.41/1.38-1.43	.30	0.55/0.53-0.58	.31/.30-.33	0.26/0.25-0.28	0.76/0.75-0.78	0.41/0.40-0.43

Genus *Malaysiamiroides*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
fuscocapitatus	3	1.44/1.40-1.53	.30	0.57/0.55-0.58	.28	0.26/0.25-0.28	0.73	0.48 (1 spec.)
hirashimai	1	1.38	.33	0.55	.28	0.23	0.73	----
kuncheriai	1	1.50	.33	0.53	.30	0.25	0.75	0.45
mirabilis	2	1.43/1.40-1.45	.35	0.57/0.55-0.58	.30	0.27/0.25-0.28	0.78	0.48

Genus *Opuna*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
annulatus	5	1.63/1.52-1.77	.44/.43-.45	0.68/0.67-0.69	.39/.38-.40	0.35/0.33-0.36	0.91/0.87-0.94	0.65/0.60-0.70
luzonica	5	2.28/2.23-2.38	.52/.50-.53	0.80/0.78-0.83	.37/.35-.38	0.44/0.40-0.48	1.16/1.13-1.20	1.06/1.03-1.08
maai	4	2.10/2.05-2.15	.48/.48-.50	0.76/0.75-0.78	.36/.35-.38	0.43/0.40-0.45	1.13/1.13-1.15	0.86/0.83-0.90
pilosulus	(available material in very poor condition)							
ryandi	4	2.14/2.03-2.30	.50/.48-.50	0.78/0.75-0.80	.38/.35-.40	0.43/0.40-0.48	1.18/1.13-1.20	0.95/0.90-1.00
sharpianus	5	1.82/1.50-2.20	.45/.42-.50	0.65/0.60-0.75	.34/.30-.38	0.37/0.34-0.40	0.92/0.83-1.01	0.78/0.63-1.00

Genus *Papuamimus*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
irianicus	1	1.86	.54	0.67	.29	0.65	0.87	0.80
maai	1	1.71	.57	0.67	.27	0.57	0.68	0.98

Genus *Paramixia*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
pacifica	8	1.84/1.70-2.05	.40/.38-.45	0.62/0.60-0.63	.34/.33-.38	0.33/0.28-0.33	0.85/0.78-0.90	0.89/0.85-0.95
papuensis	5	1.80/1.70-1.83	.39/.38-.40	0.66/0.63-0.68	.39/.38-.40	0.33/0.30-0.33	0.87/0.83-0.90	0.78/0.75-0.80
rufescens	See Table 1							
singalensis	See Table 1							

Genus Parasthenaridea

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
arecae	1	2.14	.60	0.85	.41	0.52	1.15	0.96

Genus Pilophorus

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
alstoni	3	2.12/1.00-2.23	.66/.64-.67	0.83/0.77-0.90	.40/.37-.42	0.54/0.52-0.55	0.95/0.93-0.97	0.97/0.95-0.98
bakeri	3	2.12/2.02-2.26	.66/.64-.69	0.84/0.80-0.89	.39/.38-.39	0.50/0.44-0.55	0.93/0.90-0.95	1.05/1.02-1.08
dailahn	3	2.28/2.25-2.32	.67/.65-.67	0.80/0.77-0.84	.43/.42-.44	0.58/0.55-0.61	0.87/0.82-0.94	0.92/0.89-0.95
daradae	2	2.10/2.08-2.11	.67/.64-.69	0.73/0.71-0.74	.39/.36-.42	0.48/0.46-0.49	0.79/0.78-0.79	0.82
formosanus	2	2.33/2.23-2.43	.71/.69-.73	0.83/0.78-0.87	.49/.47-.51	0.64/0.61-0.64	0.93/0.92-0.93	0.93/0.92-0.94
fyan (♀)	1	3.08	.87	0.98	.46	0.74	1.02	1.40
javanus	(the holotype, the only specimen, in poor condition)							
kockensis	2	2.28/2.25-2.30	.64/.63-.64	0.74/0.72-0.76	.34	0.53/0.52-0.53	0.97/0.96-0.97	0.91/0.85-0.96
niger(♀)	1	3.46	.92	1.10	.52	0.76	1.36	1.83
pulcher								
samoanus	1	2.68	.75	0.80	.23	0.63	1.03	1.52($)
setulosus	1	2.87	.81	1.13	.53	0.64	1.26	1.30
sumatranus	(the holotype, the only specimen, in poor condition)							
torrevillasi	2	2.37/2.30-2.44	.72/.68-.75	0.85/0.80-0.90	.45/.44-.45	0.54/0.51-0.56	1.01/1.00-1.02	1.30/1.37-1.32
typicus	4	2.14/2.07-2.18	.72/.70-.74	0.73/0.71-0.74	.34/.33-.36	0.53/0.51-0.54	0.75/0.70-0.78	1.02/1.00-1.09
yunganensis(♀)	1	3.17	.80	1.15	.60	0.74	1.41	1.18

Genus Podullahas

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
sabah	1	2.32	.52	0.63	.25	0.62	0.84	1.07
sarawak	1	2.83 (approx)	.52	0.68	.28	0.78	1.12	----

Genus Psallus

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
rubromaculosus	1	2.03	.46	0.78	.34	0.42	1.02	1.14

Genus Pseudohallodapocoris

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
ifar	1	2.52	.62	0.67	.22	0.52	0.92	1.51
kokoda	1	2.04	.61	0.63	.26	0.48	0.84	1.16
wau	1	2.27	.60	0.67	.27	0.55	1.03	1.17

Genus Pseudoleucophoroptera

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
mamai	2	2.70/2.66-2.73	.66/.65-.66	0.77/0.76-0.77	.22/.21-.22	0.53/0.51-0.54	1.07	1.64/1.63-1.64
promeceops	1	3.02	.89	0.89	.25	0.67	0.94	1.84

Genus *Ragmus*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
importunitas (India)	5	2.05/1.95-2.18	.39/.38-.41	0.68/0.65-0.70	.36/.35-.38	0.35/0.33-0.38	1.01/0.95-1.05	0.80/0.73-0.88
importunitas (other locs.)	12	2.17/2.03-2.28	.41/.40-.43	0.68/0.65-0.73	.37/.35-.38	0.40/0.35-0.45	1.08/1.00-1.18	0.86/0.78-0.95
kepilamensis	2	2.23/2.18-2.28	.46/.45-.48	0.72/0.70-0.73	.38	0.36/0.33-0.39	1.09/1.08-1.10	0.96/0.95-0.98
schefflerae	5	2.32/2/25-2.43	.46/.45-.48	0.72/0.70-0.73	.38	0.36/0.33-0.39	1.09/1.08-1.10	0.96/0.95-0.98
srilankensis	(see text)							
flavomaculatus	(available material in very poor condition)							
pellucidas	1	2.25	.40	0.68	.25	0.43	1.00	0.95

Genus *Rubrocuneocoris*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
acuminatus	10	1.59/1.35-1.80	.37/.35-.40	0.62/0.57-0.65	.27/.25-.30	0.34/0.30-0.40	0.88/0.75-0.95	0.75/0.62-0.87
bifidus	9	1.63/1.42-1.72	.36/.35-.37	0.60/0.57-0.62	.27/.26-.28	0.34/0.30-0.40	0.88/0.82-0.90	0.79/0.72-0.85
spiculatus	1	1.55	.35	0.58	.22	0.30	0.80	0.72

Genus *Sejanus*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
albosignatus	3	2.26/2.17-2.36	.50/.49-.51	0.72/0.71-0.72	.23	0.42/0.42-0.43	0.96/0.95-0.98	0.99/0.96-1.03
ansevata	4	1.94/1.84-2.06	.46/.43-.49	0.75/0.73-0.78	.23/.22-.24	0.40/0.38-0.42	0.88/0.85-0.94	0.97/0.94-1.03
biniguni	3	1.70/1.63-1.78	.42/.41-.43	0.71/0.69-0.72	.26/.25-.26	0.34/0.32-0.36	0.76/0.72-0.78	0.94/0.88-1.00
brassi	3	1.83/1.79-1.87	.44/.43-.45	0.68/0.66-0.69	.24/.22-.25	0.35/0.35-0.36	0.92/0.91-0.94	0.86/0.84-0.87
cinnameus	3	1.96/1.94-1.98	.46	0.70/0.66-0.73	.26/.25-.28	0.38/0.37-0.40	0.98/0.97-0.99	0.92/0.89-0.97
ecnomioides	2	1.92/1.85-1.98	.46/.45-.47	0.69/0.67-0.70	.26/.25-.26	0.38/0.37-0.38	0.93/0.89-0.96	0.93/0.89-0.96
ecnomios	3	2.15/2.12-2.20	.49/.48-.51	0.70	.23/.21-.25	0.41/0.39-0.42	1.08/1.07-1.09	0.98/0.96-0.99
ecnomiscos	3	1.83/1.74-1.89	.47/.46-.47	0.64/0.63-0.67	.27/.26-.27	0.40/0.36-0.44	0.92/0.86-0.96	0.86/0.79-0.92
elongatus	3	2.02/2.01-2.04	.50	0.62/0.62-0.64	.25/.24-.27	0.40/0.38-0.41	0.87/0.82-0.90	1.00/0.97-1.06
fijiensis	2	1.88 (1 spec.)	.51/.50-.51	0.64/0.62-0.66	.24/.23-.24	0.30/0.28-0.31	0.97/0.95-0.99	1.12/1.08-1.16
funerellus	3	1.51/1.40-1.58	.41/.40-.42	0.62/0.60-0.64	.23/.22-.24	0.36/0.33-0.38	0.82/0.78-0.85	0.65/0.61-0.67
funereus	1	1.63 (approx.)	---	0.60	.25	0.35	0.85	0.80
funerioides	2	2.04/2.02-2.05	.48	0.73	.27/.25-.28	0.42/0.41-0.43	1.02/1.00-1.04	0.83/0.82-0.83
hongkong	3	1.89/1.83-1.93	.46/.45-.47	0.77/0.75-0.78	.24/.23-.25	0.41/0.40-0.42	0.81/0.86-0.95	0.90/0.89-0.92
isarog	3	1.79/1.77-1.83	.46/.44-.49	0.72/0.70-0.73	.25/.24-.27	0.42/0.40-0.43	0.93/0.92-0.94	0.91/0.88-0.93
luzonicus	2	1.63/1.61-1.64	.43/.42-.44	0.63/0.61-0.64	.26/.25-.27	0.38/0.37-0.38	0.86/0.85-0.86	0.84
macer	3	2.03/1.97-2.13	.51/.50-.54	0.62/0.60-0.65	.28/.27-.30	0.38/0.37-0.40	0.89/0.86-0.96	1.06/1.02-1.10
melas	1	1.94	.51	0.72	.23	0.40	1.50	----
neofunereus	3	1.53/1.45-1.63	.41/.39-.44	0.63/0.61-0.67	.21/.20-.22	0.34/0.32-0.35	0.78/0.75-0.81	0.66/0.65-0.67
novocaledonicus	1	2.09	.46	0.77	.30	0.49	0.96	1.11
priscillianus	1	1.93	.43	0.73	.25	0.43	0.88	0.83
serrulatus	3	1.96/1.90-2.02	.51/.50-.52	0.73/0.70-0.75	.26/.25-.27	0.45/0.42-0.48	0.94/0.91-0.98	0.92/0.88-0.96
sinuosus	3	1.91/1.88-1.98	.48/.48-.49	0.61/0.60-0.62	.29/.28-.30	0.39/0.36-0.40	0.90/0.88-0.91	0.93/0.91-0.97
spiculatus	3	1.77/1.69-1.90	.43/.42-.46	0.66/0.64-0.69	.23/.23-.24	0.37/0.35-0.39	0.87/0.79-0.93	0.89/0.84-0.93
umi	3	2.12/2.10-2.15	.48/.43-.51	0.76/0.74-0.78	.26/.22-.29	0.48/0.45-0.51	0.97/0.96-0.97	1.01/0.96-1.06

Genus *Sohenus*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
uvarovi	(all available specimens mutilated)							

Genus *Sthenarus*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
myersi	3	2.14/1.98-2.39	.51/.49-.52	0.76/0.74-0.79	.35/.34-.36	0.48/0.45-0.52	1.16/1.09-1.21	0.88/0.82-0.99

Genus *Solomonomimus*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
roroni	2	1.84/1.82-1.86	.51	0.68/0.66-0.69	.21/.20-.21	0.55/0.54-0.55	0.80/0.78-0.81	0.80/0.77-0.83

Genus *Trichocephalocapsus*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
albofasciatus	3	2.82/2.68-2.90	.83/.81-.85	0.71/0.71-0.72	.29/.27-.31	0.57/0.55-0.59	0.99/0.97-1.01	1.71/1.68-1.75
immaculatus	1	----	.80	0.67	.21	0.45	0.88	1.26

Genus *Trichophorella*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
papuana	3	3.98/3.96-4.00	.62/.57-.66	0.84/0.83-0.85	.25/.24-.25	0.75/0.74-0.75	1.23/1.21-1.24	2.18 (1 spec.)

Genus *Tytthus*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
chinensis	3	1.65/1.49-1.78	.38/.35-.42	0.59/0.57-0.60	.29/.28-.30	.31/.29-.33	0.69/0.63-0.74	0.76/0.73-0.81
mundulus	3	2.29/2.21-2.30	.47/.46-.48	0.71/0.71-0.73	.36/.35-.39	.43/.41-.45	0.86/0.85-0.87	1.20/1.13-1.26
zwaluwenbergi	1	1.53	.35	0.52	.30	.30	0.70	0.61

Genus *Waterhouseana*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
illustris	1	2.70	.97	1.04	.32	1.13	0.95	1.30

Genus *Wygomiris*

	N	Apex tylus-cuneal fracture	Height head	Width head	Interocular space	Length pronotum	Width pronotum	Length ant. segment 2
dumaguete	1	1.83	.45	0.62	.27	0.50	0.97	0.67
indochinensis	1	1.94	.52	0.66	.25	0.55	0.96	0.83
mingorum	1	2.49	.52	0.79	.29	0.59	1.01	0.80
taipokau	1	2.50 (approx.)	.51	0.81	.21	0.68	1.02	0.95

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